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W. N. Baker

back

# ANNUAL REPORT

OF THE

*Summary Statistics,*

SUPERINTENDENT

*Abopp 1-6.*

OF THE

## **Montreal Water Works**

FOR THE

YEAR ENDING 31st DECEMBER 1889

*Printed by order of the Water Committee.*



*11/22/94  
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p/s statistic*

Montreal :

EUSÈBE SENÉCAL & FILS, PRINTERS,  
20 St. Vincent Street.

1890

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# ANNUAL REPORT

OF THE

## SUPERINTENDENT

OF THE

# Montreal Water Works

Compliments of

*B. D. McCa*

Superintendent Montreal Water

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ANNUAL REPORT  
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**SUPERINTENDENT of the MONTREAL WATER WORKS**  
FOR THE  
•  
YEAR ENDING 31st DECEMBER 1889.

*To the*

*Mayor, Aldermen and Citizens of the City of Montreal.*

GENTLEMEN,

I have the honor to report on the operations of the Montreal Water Works Department for the year 1889. The report is divided into the following heads. viz: 1st. Aqueduct.—2nd. Low Level Pumping Works.—3rd. Work Shop at Wheel House and Brass Foundry.—4th. Tail Race.—5th. Pipe Track and Pumping Mains.—6th. Reservoirs. — 7th. High Level Service. — 8th. Pipe Laying.—9th. Maintenance of Distribution and Service Pipes.—10th. Consumption of Water.—11th. Meters and House to House Inspection.—12th. Administration. — 13th. General Remarks. — 14th. Appendix.

1st AQUEDUCT.

The line and berm ditches, where most requiring it, were cleaned and the Aqueduct banks, where low, were raised and strengthened. Ordinary repairs were done to line fences and fences on bridge approaches. One bridge, that on the Greenshield farm, was rebuilt. Four others were straightened up and repaired. Also some trifling repairs to the crib work abutments of some of the farm bridges. The Guardian's dwelling was repaired and painted.

The high spoil bank on the right bank, near the entrance of the Aqueduct, as well as that near the Junction, are being partly washed into the Aqueduct every spring and every heavy rain storm. This will go on, unless money is granted to cut down these spoil banks, grade the tops, with a fall to the back and put

## IV

some soil on the front slope and seed it down so as to form a sod. The stuff washing in must obstruct the Aqueduct more or less, and to prevent its going in will cost less than to take it out again.

The retaining walls along the banks are generally in good condition, though some repairs are needed at certain points.

The power furnished by the Aqueduct during the year, has been about an average of what it has given since the opening of the new entrance and the placing of the last turbine wheel at the pump house.

The pier of the stone bridge carrying the Pavillion road over the Aqueduct offers, in winter a serious obstruction to the flow of water, affording a nucleus around which ice forms to a much greater thickness than in other parts of the Aqueduct. I have reported on this matter to the Water Committee recommending the removal of the pier and conversion of the bridge into a single span girder.

### 2nd. LOW LEVEL PUMPING WORKS.

The repairs to the water power machinery have been light. Wheels Nos. 1, 3 and 4 are in fair condition. No. 2 is, as reported a year ago, very much the worse for wear. The pumps of Nos. 2 and 3 are worn out.

Steam Engine No. 1 is in good condition and has worked satisfactorily when required during the year. This engine was accepted by the Water Committee on 10th September 1889 and the final payment on the contract with Messrs. Henry R. Worthington was made on 31st December. The contract price was \$51,650.00.

Steam Engine No. 2 "the Gilbert" is not kept in working order, being considered, at best, unreliable, in fact not to be reckoned with the available pumping power.

Steam Engine No. 3. This engine requires to be taken apart and examined pretty closely and repaired, before it can be said to be in an efficient condition, though it may be set to work at any time.

The Wheel House foundations are in want of repair. It may be found that pointing the joints of the masonry will be sufficient, at all events not much more can be done without too long an interruption of the pumping. The walls outside, above ground, require pointing.

The Engine House with the exception of one corner of the new extension, which shows some signs of settling, is in good order.

The floors of the Boiler House of the 2nd and 3rd batteries, are very dilapidated and should be torn out and remade in concrete.

The Coal Shed is in fairly good condition. Some of the posts supporting the beams have settled a little and require re-adjusting.

The boilers are in good order. The Leadbeater bars and blast

were applied to two of the Heine boilers enabling steam to be kept up with a cheap quality of coal.

Four of the dwellings have privies instead of water closets, and at times in summer the stench from these is very offensive on the other side of the dwellings and scarcely a hundred yards off is the River St. Pierre carrying with its waters, offal, in various stages of putrefaction, and giving off most disgusting odours. The whole arrangement is diametrically opposed to hygienics. These facts have been reported to the Water Committee.

For all detail concerning these works I beg to refer to the report of the Chief Engineer of the low level pumping works, page 9. of appendix.

The total quantity of water pumped by water power during the year is 3,482,880,000 gallons with an expenditure of \$5674  $\frac{71}{100}$  making \$1.62  $\frac{2}{100}$  per million gallons raised 169 feet, or \$0.00  $\frac{26}{100}$  per foot high.

The total quantity pumped by steam power during the year is 1,211,347,800 the expenditure for which is \$15,960  $\frac{60}{100}$  equal to \$13 17  $\frac{3}{100}$  per milion gallons raised 169 feet or \$0.07  $\frac{1}{100}$  per foot high.

Schedule No. 5, in appendix, shows the work done by the different pumping engines at the low level pumping works.

The following table shows the cost of raising one million gallons one foot high, by water power and by steam power, for the last fifteen years and the average cost, by each method, for the same period.

| YEAR.                    | BY WATER.     | BY STEAM. |
|--------------------------|---------------|-----------|
| —                        | —             | —         |
| 1875.....                | \$0.0200..... | \$0.119   |
| 1876.....                | 0.0140.....   | 0.144     |
| 1877.....                | 0.0158.....   | 0.080     |
| 1878.....                | 0.0106.....   | 0.170     |
| 1879.....                | 0.0093.....   | 0.119     |
| 1880.....                | 0.0120.....   | 0.123     |
| 1881.....                | 0.0136.....   | 0.121     |
| 1882.....                | 0.0118.....   | 0.258     |
| 1883.....                | 0.0135.....   | 0.134     |
| 1884.....                | 0.0124.....   | 0.211     |
| 1885.....                | 0.0102.....   | 0.094     |
| 1886.....                | 0.0110 ..     | 0.138     |
| 1887.....                | 0.0092.....   | 0.117     |
| 1888.....                | 0.0112.....   | 0.082     |
| 1889.....                | 0.0096.....   | 0.078 -   |
| Average of 15 years..... | 0.0123.....   | 0.132     |

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### 3rd. WORK SHOP AT WHEEL HOUSE AND BRASS FOUNDRY.

These are in good order, requiring little or no repairs. The work shop should have another lathe. Work which could be done in this shop, much more economically than elsewhere, has to be sent out. Probably as much money has been spent in this way, since the lathe was asked for, as would pay for it.

The following is a list of new work turned out from the shop.

|      |   |  |
|------|---|--|
| 50   | 4" valves complete planed and bored<br>including brasses. | } Sent to McDou-<br>gall to be fitted. |
| 102  | 6" valves complete planed and bored<br>including brasses. |  |
| 100  | New Hydrants.   |  |
| 16   | New 4" valves.  |  |
| 36   | do 6" "   |  |
| 5    | do 8" "   |  |
| 19   | do 10" "  |  |
| 44   | do 12" "  |  |
| 1    | do 4" valve spindle.                                      |  |
| 1    | do 6" " "   |  |
| 120  | $\frac{5}{8}$ " stop cocks old kind.                      |  |
| 119  | $\frac{5}{8}$ " pneumatic stop valves.                    |  |
| 3126 | $\frac{1}{2}$ " " " "                                     |  |
| 8    | 1" " " "  |  |
| 5    | $1\frac{1}{2}$ " stop cocks for iron pipe.                |  |
| 700  | $\frac{1}{2}$ " 2 way branches.                           |  |
| 243  | $\frac{1}{2}$ " 3 " "                                     |  |
| 195  | $\frac{1}{2}$ " 4 " "                                     |  |
| 176  | $\frac{5}{8}$ x $\frac{1}{2}$ " reducing couplings.       |  |
| 187  | $\frac{1}{2}$ " Nozles.                                   |  |
| 1495 | $\frac{5}{8}$ " "   |  |
| 4    | 1" "  |  |
| 50   | 3" Hydr. watering nozles.                                 |  |
| 12   | Spare 6" hydrant bottoms.                                 |  |
| 303  | Service rods.   |  |
| 53   | $\frac{1}{2}$ " steel nozle drills.                       |  |
| 58   | $\frac{5}{8}$ " " " "                                     |  |
| 24   | $\frac{1}{2}$ " couplings.                                |  |
| 30   | $\frac{5}{8}$ " "   |  |
| 12   | Hydr. leather rings.                                      |  |
| 542  | Nipples.  |  |
| 3760 | Round ends.   |  |
| 3800 | Sqr. ends.  |  |
| 7208 | Pointed ends.   |  |
| 7745 | Union couplings.  |  |

## VII

|      |  |                                |
|------|--|--------------------------------|
| 7284 | Tube caps.                                 |                                |
| 86   | $\frac{3}{4}$ " bolts and nuts.            | } Pipe laying.                 |
| 24   | $\frac{3}{4}$ " eye bolts and nuts.        |                                |
| 4    | $1\frac{1}{8}$ " bolts and nuts            | L. Lachine road Bridge.        |
| 24   | $\frac{3}{4}$ " " "                        | } Bridges L. of Aqueduct.      |
| 12   | Sqrs $1\frac{1}{2}$ " x $1\frac{1}{2}$ "   |                                |
|      | 105 lbs.                                   |                                |
| 4    | $1\frac{1}{4}$ " bolts and nuts            | 46 lbs.                        |
| 6    | $\frac{7}{8}$ " studs $2\frac{1}{2}$ long. | } High L. Eng.                 |
| 121  | Suction valve springs.                     |                                |
| 20   | Brass valves                               | 44 lbs.                        |
| 28   | Water meter pistons.                       |                                |
| 1    | Hydrant valve and seat (extra).            |                                |
| 21   | do brass sockets                           | "                              |
| 2    | New plungers for feed pump eng.            | No. 3 fitted.                  |
| 164  | $\frac{1}{4}$ " Iron pins for fences.      |                                |
| 34   | $\frac{3}{8}$ " bolts and nuts.            | } Coffer dam river St. Pierre. |
| 6    | 1" " "                                     |                                |
|      | 778 lbs.                                   |                                |
| 32   | Chaldrons of coke.                         |                                |

### REPAIRS DONE IN MACHINE SHOP.

|   |  |
|---|--|
| 6   | $\frac{5}{8}$ " union meters.                          |
| 1   | 1" " "   |
| 1   | 12" valve gate faced anew.                             |
| 1   | Hanging machine with new nut, new screw and new punch. |
| 23  | Hydrants.  |
| 11  | Air pumps.   |
| 749   | Pick axes.   |
| 545   | Tools for cutting and caulking pipes.                  |
| 16  | Steel drills.  |
| 37  | Fire irons.  |
| Brass Castings delivered from Foundry for the |  |
| year 1889..... 17257 lbs.                     |  |

### 4th. TAIL RACE.

The wood work of the bridge over the Tail Race at the Lower Lachine Road was rebuilt. The masonry is in bad condition, some of the stones of the upper courses in both abutments requiring resetting and nearly all above water require pointing.

Some trifling repairs were done to the fences.

### 5th. PIPE TRACK AND PUMPING MAINS.

The Revetment wall holding up the bank on the west side of Atwater Avenue between St. Antoine and Dorchester streets is

## VIII

considerably bulged in places and looks as though it might soon fall down. This was reported to the Water Committee who ordered it to be temporarily stayed, which was done, intending to have it rebuilt this year.

Atwater Avenue south of St. James street has the appearance of a public street, people of St. Henry and St. Cunegonde having built fronting on it.

The duplicating of the 30 inch pumping main was carried out from the Wheel House to St. Antoine street, with the exception of a gap at the Grand Trunk Railway and St. James street and another near St. Antoine street. Under the River St. Pierre and from there southward to the Grand Trunk Railway, the pipe is doubled to provide for future needs. The culvert through which the pipes pass under the Railway is large enough to carry two 30 inch pipes and in fact the double line is laid half way through it and the incomplete line can be completed, whenever wanted, at very small cost.

The contract for this culvert, which a 10 ft. stone arch, was let to Mr. Peter Nicholson for \$4000.00, a very low price. However he completed the work satisfactorily, but now asks to be compensated for loss which he alleges he sustained through the Grand Trunk Ry. by exacting heavier work than he had anticipated for the protection of their tracks. His demand has been referred to the City Council.

The delivery pipe from No. 1 turbine is connected to the new 30 inch main and the arrangement affords considerable relief to the water power machinery generally, the discharge from which, prior to this alteration, was somewhat congested in the vicinity of the pumps. This improvement was projected and partly provided for by the late superintendent, just before his illness incapacitated him for business. The plan includes a connection between the new 30 inch main and the two 24 inch mains passing through the tunnel wall at a point about 50 feet from the north end of the Wheel House. Bad weather and other unforeseen causes of delay, brought the work so late in the season that it was deemed advisable to postpone its completion until the summer of 1890. The requisite special castings are all provided and it is intended to make the connection this year. A 24 inch branch line is taken from the new 30 inch main in Centre street and has been carried eastward in that street and connected at St. Luke street and Napoleon Road with the distribution pipes of St. Gabriel Ward.

### 6th. RESERVOIRS.

The masonry of the high level reservoir was carefully examined, the cement in all bad joints scraped out and the joints refilled as far as possible and the whole, well pointed. The reser-



## IX

voir was also thoroughly cleaned out. On refilling, the leakage was found to be reduced to almost nil. What remains being probably percolations through unobserved fissures in the rock bottom.

The drain pipe from this Reservoir was trapped. It is a 12 inch iron pipe as far as the foot of the slope in front of the reservoir from which point a tile pipe is used as far as the city sewer in Peel street. This tile pipe gives out whenever used and it is necessary to substitute iron pipe to avoid damaging property close by.

The front and end walls of McTavish street reservoir underwent extensive repairs, which they very much required and which resulted in stopping almost entirely the leakage. When the water was out, the Reservoir was found to have a very considerable accumulation of sediment, which should be removed as soon as possible.

The old part of the division wall, is in very bad condition, so bad in fact, that as a division wall, it is useless. Repairs will be attempted this year.

The dry retaining wall on the lower side of Carleton Road, was repaired.

Many parts of the wall holding up the foot of the slope of the reservoir embankment are giving way and should be repaired this year.

Some trifling repairs to the Valve House are also needed.

The report of the Engineer of the High Level Pumping station, who is also guardian of both Reservoirs, gives full details. Said report will be found in appendix.

### 7th. HIGH LEVEL SERVICE.

The buildings are in very fair order. The Engineer's report, in appendix, page 14 gives all necessary information on minor points.

No. 2 Engine (the new Gilbert engine) did nearly all the pumping, No. 1, the old non condensing Worthington, having merely worked about 60 hours, on two occasions, the first whilst the Peel street Reservoir was undergoing repairs and cleaning and the other, when condenser of No. 2 was being repaired.

The engines are both in good condition, as is the one boiler also. But the risk of being without a spare boiler, is such as should not longer be run. The boiler was fitted with the Lead-beater bars and steam jets.

The high level district is being gradually extended, as the increased pumping done in 89 over that in 1888 plainly indicates, the former being 54 % above the latter. The increase in the area supplied from these works will not however account entirely for the great increase in consumption and it is very probable that

the high pressure keeps the fittings in houses more generally out of repair, than they are in the low level district and that consequently waste is much greater there, in proportion to population.

Schedules 6 and 7 in the appendix show the number of gallons pumped during the year to have been 126,419 000 gallons, with an expenditure, as taken from schedule 16, of \$3259  $\frac{1}{10}$  equal to \$25.78  $\frac{1}{10}$  per million of gallons pumped, or \$0.12  $\frac{1}{10}$  per million raised 1 foot high.

The cost of raising 1 million gallons 1 foot high, was :

|                          |         |
|--------------------------|---------|
| In 1876.....             | \$0.240 |
| " 1877.....              | 0.253   |
| " 1878.....              | 0.355   |
| " 1879.....              | 0.283   |
| " 1880.....              | 0.274   |
| " 1881.....              | 0.226   |
| " 1882.....              | 0.256   |
| " 1883.....              | 0.286   |
| " 1884.....              | 0.218   |
| " 1885.....              | 0.376   |
| " 1886.....              | 0.250   |
| " 1887.....              | 0.187   |
| " 1888.....              | 0.197   |
| " 1889.....              | 0.121   |
| Average of 14 years..... | 0.259   |

### SH. PIPE LAYING.

The total length of cast iron pipe laid in the City during the year 1889 was 2742 feet or 10  $\frac{1}{10}$  miles, the weight of metal being

2742 feet of cast iron pipes laid and their lengths were 24 inch 1103 feet, 12 inch 1103 feet, 8 inch 989 feet, 6 inch 20124 feet

valves laid, viz, 4 of 30 inch, 1 of 24 inch, 39 of 12 inch, 8 of 8 inch, 140 of 6 inch, and 55 of 4 inch.

and valves put in are not for distribution in factories, to elevators, or to stand pipes in buildings. It is now a rule of the Department that no pipe of smaller internal diameter than 6 inches, be

put in during the year is 196, of these 196 are for stand pipes and the remainder two nozzles.

Lead pipe, of 2" diam, laid is 54 feet. Lead pipe to 2,934 houses,— 2,930 stop cocks,

## XI

of which 2,748 are pneumatic cocks, the balance being the old kind of plug cock

Schedule No. 12 in appendix shows the work done in pipe laying in the different streets and wards of the City during the year.

The old pipes taken up or abandoned in the ground as useless, amounted to 9,350 feet, and there were for the year '88 (omitted from the record of that year) 10,590 feet of pipe abandoned in the ground, making for the two years 19,940 feet or 3.77 miles to be deducted in order to arrive at the actual pipe mileage of the City. In Schedule No. 13, this deduction has been made and the result shows the length of pipe in use in the City (not including house services) up to December 31st '89 to be 884,176 feet or 167½ miles.

### 9th. MAINTENANCE OF DISTRIBUTION PIPES, SERVICE PIPES, HYDRANTS AND PUBLIC FOUNTAINS.

Schedules Nos. 9 and 15 and the report of Mr. Lagacé, foreman of distribution, in appendix, give details of all work under this heading. Repairs to distributing mains were about the average. There are some mains known to be in bad order and to have been so for years. The cost, of searching for leaks on them and of repairs to them and of the water wasted through them, is very considerable and would warrant uncovering the pipes and putting new ones in their places or at least recaulking all joints and in some cases melting out and renewing the joints. This work will be recommended to the Water Committee to be done during the current year.

The number of leaks on service pipes is unusually large.

Hydrants found frozen are much fewer than ordinarily. Repairs to hydrants have been very considerable, consisting principally of renewing of valves and of rods. The practice of allowing the fire hydrants to be used for other purposes than that one important purpose for which they are ostensibly put in position and from which they derive their name, cannot be too strongly condemned. Constant inspection of them is necessary in order to find out which ones have been injured and require repairs and after all there must be a certain doubt that some hydrant at some critical moment, may be found unfit for service. The men of the Fire Department alone, should be allowed to use them and special stand pipes should be provided for the Road Department's men, where they could get water, for street sprinkling and other purposes.

Only one ornamental fountain was put in during the year namely that at Cherrier Square, St Jean Bpt. Ward.

Schedule No.16 shows the expenditure under each of the foregoing heads.

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## XII

### 10th. CONSUMPTION OF WATER

The total quantity pumped during the year is 4,694,227,000 gallon being 218,194,000 gallons less than in 1888. The daily average consumption was 12,861,000 for '89. against 13,442,000 for '88.  $\frac{2}{3}$  of the whole quantity pumped was pumped by water power, and the balance by steam, that is, the water power furnished a daily average of about  $9\frac{1}{2}$  millions. See schedule No. 5 in appendix.

The purposes for which the water has been used will be found classified, in the report of the assistant Supt., in appendix, which report also gives the quantities under the different heads.

### 11th. METERS AND HOUSE TO HOUSE INSPECTION.

The number of meters in use is 670. As water sold by meter gives an average price of 18cts per 1000 gallons against 13 $\frac{1}{2}$  cts. per 1000 for that sold at rates based on rental, it would seem desirable to encourage the use of meters for all but the domestic supply.

All requisite information in reference to the meter branch of the Water Dept., as well as full details touching the House to House Inspection, will be found in the Assistant Supt's. report and in schedule No. 11 hereto appended.

### 12th. ADMINISTRATION.

Schedule 16 in appendix gives in detail the expenditure for maintenance as well as for improvements. The first shows a total of \$93,534.64, which is somewhat less than the appropriation. This is no proof that the money asked for and granted was greater than actually required. On the contrary much more could have been profitably expended, and the discrepancy may be attributable in some measure perhaps to over precaution and the desire not to exceed the appropriation of council.

The expenditure for improvements amounts to \$232,713.89. This covers pipe laying, the balance on the Worthington Engine, Royalty on patent Pneumatic stop cock, and outside professional services.

### 13th. GENERAL REMARKS.

The condition of the works generally, during the year, may be characterized as efficient.

There was no complaint of want of water at any fires,—no serious break down of machinery and no stoppage of supply to any part of the city for any considerable time.

This should not be taken as an indication that nothing is wanted in the way of improvement or addition to the works. At page 33.

### XIII

of appendix will be found a special report from the Superintendent calling the attention of the Water Committee to some of the most pressing requirements of the Department. No action was taken however.

The completion of the large aqueduct, one section of which was made upwards of twelve years ago, seems no longer to occupy the attention of the council or even of the Water Committee and yet the necessity for increase of supply, from some source, becomes every year more apparent. The mode of obtaining that increased supply was determined on years ago, upon the advice of men eminently competent to advise on such a question. The value of the land required for the new works proposed, increases year by year, as the city and suburbs extend.

If the works are to be constructed at all, it is certain that postponing the matter, will enhance the cost and if commenced at once, they will not be completed any sooner than wanted.

The principal improvements contemplated this year are in pipe laying. The 24 inch main commenced in Centre street will be extended to Montmorency and along Montmorency and across the Canal to William street where it will be connected with the 12 inch of that street. On St. Catherine street from Peel westward to Closse a 12 inch pipe will be laid, fed from the High Level Reservoir. This pipe is intended for fire service, the pressure on the low level main in this district being inadequate.

The 20 inch High Level Pumping main will be extended up McTavish street and westward on Pine Avenue to the head of Peel street.

Several other streets, on which the Road Dept. intends laying permanent paving, will require their water pipes renewed.

The energy and ability brought to bear, in the discharge of their duties, by the officials at the heads of the several branches of the Department, has been very gratifying.

I have the honor to be

Gentlemen,

Your obedient servant

B. D. McCONNELL,

*Supt. M. W. W.*



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| “ 12 do Pipes &c, laid in 1889.....   | 46   |
| “ 13 do Total pipes &c., laid.....  | 61   |
| “ 14 do Average pressure in City mains.....   | 62   |
| “ 15 do Positions of Fountains.....   | 63   |
| “ 16 do Administration.....   | 65   |
| “ 17 do Inventory of stock.....   | 70   |
| Report on test of coal from Archibald mine... ..  | 72   |
| do do of Intercolonial coal.....  | 73   |
| do do of the Leadbeater Furnace with Intercolon. coal .....                                 | 74   |
| do do of Scotch International and Welsh Anthracite<br>coal with the Leadbeater Furnace..... | 75   |

*Report of the Assistant-Superintendent of Water-Works, on Meters and House-service inspection, for the year 1889.*

Montreal, 16th. June 1890.

B. D. McCONNELL, Esq.,

*Supt. M. W. W.*

I herewith beg to submit, for your information, the following brief report upon the meter and house-service inspection branches of the water department for the year 1889.

**METERS.**

The number of meters in use, inclusive of those at the wheel house, at the end of the year was 670, showing an increase of 44 over 1888. The city owns 610; the other 60 belong to private individuals or companies.

There were 106 new places metered and 58 meters in use were discontinued.

There were 119 changes of meters made for various reasons, some being out of order and others too small.

The number of meters damaged by frost was 5.

One belonging to a private party was completely destroyed.

The department purchased during the year 112 new meters :

|             |       |
|-------------|-------|
| Crown.....  | 44    |
| Gem.....    | 16    |
| Empire..... | 51    |
| Hersey..... | 1     |
|             | <hr/> |
|             | 112   |

and also 3 Crowns which had been in use by Mr. Rodgers.

There were also 10 meters purchased by private parties :

|            |       |
|------------|-------|
| Crown..... | 8     |
| Gem.....   | 2     |
|            | <hr/> |
|            | 10    |



Seventy two (72) of the new meters purchased this year were used to replace the old Union meters which were in use for a number of years and completely worn out.

There were 11 meters at the harbour latrines and drinking fountains, where over 12½ millions of gallons of water were used, showing about the same consumption as last year. The city supplies this water to the harbour without charge.

There were 5 meters at the Low-Level Pumping Works, 3 to measure the water used at steps of turbines and 2 to feed water to boilers.

The water sold by meter last year and the previous year was as follows :

|  | Millions of Gallons |        |
|--|---------------------|--------|
|  | 1888                | 1889   |
| Railways (including street Railway).....   | 150.66              | 153.62 |
| Factories and Engines.....   | 97.54               | 121.82 |
| Elevators (exclusive of those at R'ys & Hotels)....  | 103.55              | 115.69 |
| Breweries.....   | 23.52               | 23.11  |
| Hotels.....  | 38.20               | 36.54  |
| Schools, Convents & Colleges.....  | 15.88               | 18.39  |
| Hospitals & Homes.....   | 9.53                | 7.89   |
| Churches & Organs.....   | 5.35                | 3.82   |
| Miscellaneous as photographers, livery stables,<br>skating rinks, horse exchange, restaurants,<br>dyers, florists, &c..... | 19.42               | 14.46  |
| Outside Municipalities.....  | 22.39               | 20.82  |
| Totals.....  | 486.04              | 516.16 |

Showing and increase of 6.20% over 1888.

### HOUSE SERVICE INSPECTION

This inspection has been kept up throughout the year, 5 inspectors being engaged on it.

The result of this inspection was the discovery and stoppage of waste from defective fittings as enumerated below, viz :

|                                   |      |         |       |       |     |      |
|-----------------------------------|------|---------|-------|-------|-----|------|
| Bib cocks out of repair.....      | 2812 | wasting | 29666 | galls | per | hour |
| Urinal " " " .....                | 80   | "       | 1346  | "     | "   | "    |
| Ball " " " .....                  | 1412 | "       | 22492 | "     | "   | "    |
| Stop " " " .....                  | 72   | "       | 1405  | "     | "   | "    |
| Closet " " " .....                | 222  | "       | 4361  | "     | "   | "    |
| Basin " " " .....                 | 168  | "       | 1820  | "     | "   | "    |
| Closet valves out of repair. .... | 137  | "       | 3426  | "     | "   | "    |
| Water closet " " .....            | 68   | "       | 2450  | "     | "   | "    |
| Pipes burst " " .....             | 907  | "       | 11041 | "     | "   | "    |
| Other defective fittings.....     | 12   | "       | 345   | "     | "   | "    |
| Total defective fittings.....     | 5890 |         | 78352 | "     | "   | "    |

Supposing for a moment that this inspection is not made, a great part of these fittings would not be repaired and would leak during the whole year, increasing the consumption considerably.

To show the importance of this inspection we will admit that each of these leaks runs for 30 days (this supposition could be made much higher).

The total waste for 30 days will be :

$$78,352 \times 24 \times 30 = 56,413,440 \text{ gallons.}$$

The water being charged at 14 cts per 1000 gallons the revenue would be :

$$56,413,440 \times \$0.14 = \$7,897.88$$

The expenses for the 5 inspectors for the year is \$3,000.00. The difference \$4,897.88 is the saving.

As it takes about 6 months, with the 5 inspectors we have, to go all over the city, the leaks here enumerated are only a small fraction of what is really wasted.

The inspectors found also the following irregularities :

|  |     |
|--|-----|
| Taps opened to prevent freezing.....             | 38  |
| “ “ “ flush drains.....                          | 41  |
| Using water illegally for building purposes..... | 147 |
| “ “ “ “ manuf. “ .....                           | 17  |
| “ hand hose illegally.....                       | 116 |
| Hydrants used without a permit.....              | 10  |
| Total.....                                       | 369 |

All cases of illegal use of water were arrested as soon as discovered. The number of prosecutions in the recorder's court was 107.

#### COMPARISON OF METER RATES WITH RATES BASED ON ASSESSED RENTAL.

|  | Gallons.      |
|--|---------------|
| The total quantity of water pumped in 1889 is..... | 4,694,227,347 |
| That bringing no direct revenue was:               |               |
| Flooding private rinks, etc.....                   | 2,020,738     |
| Fires.....   | 7,777,570     |
| Watering streets.....                              | 57,049,260    |
| Public Fountains.....                              | 30,456,000    |
| Harbour.....                                       | 12,569,023    |
| Steps of Turbines.....                             | 13,324,319    |
| Total.....   | 123,197,510   |
| Balance producing Revenue.....                     | 4,571,029,837 |

|  | GALLONS.    | GALLONS.      |
|--|-------------|---------------|
| Balance producing revenue.....         |             | 4,571,029,837 |
| That charged for at meter rates:       |             |               |
| Railways (including Street Ry.)...     | 153,624,667 |               |
| Factories and Engines .....            | 121,822,993 |               |
| Elevators (Exclusive of those at       |             |               |
| Hotels and Railways).....              | 115,692,221 |               |
| Breweries .....                        | 23,109,868  |               |
| Hotels.....                            | 36,535,807  |               |
| Schools, Convents & Colleges .....     | 18,391,417  |               |
| Hospitals & Houses.....                | 7,890,750   |               |
| Churches, for Organs.....              | 3,817,420   |               |
| Miscellaneous, Livery Stables, skating |             |               |
| rinks, Restaurants, dyers, &c. ....    | 14,459,414  |               |
| Outside City Limits.....               | 20,824,244  |               |
| Total .....                            | <hr/>       | 516,168,801   |

Balance, being that charged for at rates based on  
rental and special rates and including waste..... 4,054,861,036

The revenue from water in 1889 was.. \$637,386.36

That from metered water including rent  
of meters was..... \$93,648.69

Balance being revenue from rates based  
on rental and sundry special charges. \$543,737.67

Total water from which revenue is de-  
rived ..... 4,571,029,837 galls.

Revenue from same..... \$637,386.36  
being at the rate of 14 cents per 1000 gallons.

Total water sold at rates based on rental.....4,054,861,036 galls.

Revenue from same..... \$543,737.67  
being at the rate of 13 $\frac{2}{3}$  per 1000 gallons.

Total water sold at meter rates.....516,168,801 gallons.

Total revenue from same..... \$93,648.69  
being at rate of 18 cents per 1000 gallons.

The number of prosecutions for violation of the by-law relating  
to meters was 2.

The monthly inspection and roading of all meters in use, has  
been kept up as usual.

Your obedient servant,

J. O. ALFRED LAFOREST,

*Assistant-Superintendent*

M. W. W.

SUMMARY OF STATISTICS  
REPORT OF 1889.

IN ACCORDANCE WITH THE RECOMMENDATION OF THE NEW  
ENGLAND WATER WORKS ASSOCIATION.

MONTREAL WATER WORKS.

Montreal, county of Hochelaga, Province of Quebec, Canada  
supplies also the municipalities of Maisonneuve, Côte St. Antoine,  
Côte St. Louis, St. Louis du Mile-End and Côte de la Visitation.

POPULATION.

|                                   |         |
|-----------------------------------|---------|
| Montreal (estimated in 1889)..... | 235,000 |
| Maisonneuve .....                 | 1,200   |
| Côte St. Antoine.....             | 1,600   |
| Côte St. Louis.....               | 3,000   |
| St. Louis du Mile-End .....       | 3,000   |
| Côte de la Visitation.....        | 600     |
| Total.....                        | 244,400 |

DATES OF CONSTRUCTION.

LOW LEVEL SERVICE—

|  |  |      |
|--|--|------|
| Wheels 1 and 2 (?)<br><br>wheel 3 (?)            | Aqueduct .....   | 1856 |
|  | 2 Breast Wheels, with six pumps.....   |      |
|  | Capacity 4 million gallons per diem.   |      |
|  | 1st 24 inch Rising main.....   | 1865 |
|  | McTavish Street Reservoir, 15 million gallons.....                                   |      |
|  | 1 Turbine wheel with two pumps.....  | 1867 |
|  | Capacity 4 million gallons per diem.   |      |
|  | 2nd 24 inch Rising main. ....  | 1869 |
|  | Bartley Steam Engine, 3 million gallons.....   |      |
|  | Gilbert do do .....  | 1872 |
| 4  | Tail Race lowered.....   |      |
|  | Turbine substituted for Breast Wheel.....  | 1874 |
|  | Worthington Steam Engine, 8 million gallons.....                                     | 1875 |
|  | 1st 30 inch Rising main.....   |      |
|  | New entrance to Aqueduct opened.....   | 1877 |
|  | Extension of McTavish Reservoir, bringing its<br>capacity to 35 million gallons..... | 1878 |
|  | Turbine Wheel 2 pumps, 2½ million gallons.....                                       | 1881 |
| Bartley Engine removed.....                      |  | 1885 |
| Worthington Steam Engine, 10 million gallons.... |  | 1886 |

**HIGH LEVEL SERVICE—**

|   |        |
|---|--------|
| Peel Street Reservoir, Capacity $1\frac{3}{4}$ million gallons. | } 1875 |
| Worthington Steam Eng. do $\frac{1}{2}$ do per diem.            |        |
| 1—12 inch Rising main.....                                      |        |
| Gilbert's Steam Eng. Capacity 3 million per diem.               | 1889   |

**BY WHOM OWNED.**—City of Montreal.

**SOURCE OF SUPPLY.**—River St. Lawrence.

**MODE OF SUPPLY.**—Open Aqueduct 5 miles in length.

74 per cent pumped by water power.  
26 do steam do

**PUMPING.****1. Builders of Pumping Machinery—**

**Water Wheels.**—Wm. Fairbairn & Son, Manchester, England.

John McDougall, Montreal.

W. P. Bartley & Co. do

R. D. Wood & Co., Philadelphia, Pa.

**Steam Engines.**—W. P. Bartley & Co. Montreal.

E. E. Gilbert, do

Henry R. Worthington, New York.

**DESCRIPTION OF COAL USED.**

|   | Low level service.     | High level service |
|---|------------------------|--------------------|
| Kind.....   | Bituminous.            | Anthracite.        |
| Size.....   | Broken.                | Broken & Stove.    |
| Brand.....  | Scotch & Nova Scotian. | Welsh & American.  |
| Price per gross ton...  | \$5.00.....\$3.85      | \$ 5.20            |
| Percentage of ash.....  | 5.70                   | 11.63              |
| 5. Coal consumed for year .... lbs.                             | 4,826,390              | 455,648            |
| 6. Total pumped by steam gallons.                               | 1,211,347,586          | 126,418,495        |
| 7. Average static head in feet.....                             | 169                    | 213                |
| 8. do dynamic do .....  | 184                    | 265                |
| 9. Gallons pumped per lb. of Coal.                              | 251                    | 277                |
| 10. Duty, ft. lbs. per 100 lbs. of Coal<br>(no deductions)..... | 46,181,100             | 76,853,016         |
| 6. Total pumped by water power<br>for year, in gallons.....     | 3,482,879,761          |                    |
| 7. Average static head, in feet.....                            | 189                    |                    |
| 8. do dynamic do .....  | 193                    |                    |

## COST OF PUMPING FIGURED ON PUMPING STATION EXPENSES.

|   | Low Level Service.                  |                                     | High                                |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
|   | By water.                           | By steam.                           | Level Service.<br>By steam.         |
|   | viz : \$5,674 71                    | \$15,960.60                         | \$3,259.81                          |
| 11. Cost per million gallons<br>raised against dynamic<br>head..... | \$1.63                              | \$13.17                             | 25.77                               |
| 12. Cost per mill. gall. raised<br>1 foot (dynamic).....            | 0.00 <sup>14</sup> / <sub>100</sub> | 0.07 <sup>15</sup> / <sub>100</sub> | 0.09 <sup>72</sup> / <sub>100</sub> |

### CONSUMPTION.

|  |                               |
|--|-------------------------------|
| 1. Estimated total population at date... | 235,000                       |
| 3. do do supplied...                     | 234,000                       |
| 4. Total number of gallons consumed...   | 4,694,227,347                 |
| 5. Passed through meters, domestic.      | 371,23 mill. galls or 8 perc. |
| 6. do manufacturing.                     | 144,93 do or 3 do             |
| 7. Average daily Consumption..gallons.   | 12,860,897                    |
| 8. Gallons per day to each inhabitant... | 54.7                          |
| 9. do do consumer.....                   | 54.9                          |

### DISTRIBUTION.

|  |            |                   |
|--|------------|-------------------|
| 1. Kind of pipe used.....  | Cast Iron. | Wrot, iron & lead |
| 2. Sizes do .....  | 3" to 30"  | 2½" and under     |
| 3. Extended, feet.....   | 53186      |                   |
| 4. Discontinued, feet.....   | 9350       | 750               |
| 5. Total now in use, miles .....   | 165½       | 2                 |
| 9. Hydrants added in 1889.....   | 182        |                   |
| 10. do now in use.....   | 1403       |                   |
| 11. Stop Gates added.....  | 259        |                   |
| 12. do now in use.....   | 1698       |                   |
| 15. Range of pressure on mains, day<br>and night, at Fire Station No. 2<br>St. Gabriel Street..... | 69         |                   |

### SERVICES.

|  | Lead and Wrot. Iron. |
|--|----------------------|
| 17. Sizes.....                               | from 2½ to ½ inch.   |
| 18. Extended feet.....                       | 58,435               |
| 21. Service taps added (new houses supplied) | 2,934                |
| 22. Total now in use (houses supplied).....  | 37,577               |
| 23. Average length of service pipe.....      | 20 feet              |
| 24. do cost do do .....                      | 10.24                |
| 25. Meters added.....                        | 125                  |
| 26. do now in use.. .....                    | 886                  |
| 28. Motors now in use.....                   | 163                  |

J. O. ALFRED LAFOREST,

Assistant-Superintendent, M. W. W.

## LOW LEVEL PUMPING STATION, M.W.W.

JANUARY 22nd 1890.

B. D. McCONNELL, Esq.,

*Superintendent Water Works.*

DEAR SIR,

I respectfully beg to submit my annual report for the year ending December 31st 1889.

### No. 1 WHEEL HOUSE

The repairs done to this building consist only of the renewing of the north door and frame and some slight patching to the wood work. I recommended the painting of the doors and windows in my last two reports, which was not done, they are now in a very unsightly condition and fast going to rot, they should be painted as early as possible.

The stone steps at the north end were demolished in consequence of pipe laying. I would recommend that they be replaced with wooden steps furnished with a proper stone foundation. The stairs in front of Engine House will have to be renewed also and all the outside stone work should be pointed.

### Nos. 2, 3 & 4 WHEEL HOUSE.

No repairs were done to this building. The doors and windows are in the same condition as those of No. 1 and should be painted. A portion of the south end wooden sheeting where the large window was bricked up, and the walls adjacent to the iron doors should be repaired; also the large timbers of the head race retaining rack will require to be renewed.

### THE WORK SHOP

There was no repairs done to this building nor is it likely to require any during the year.

### BRASS FOUNDRY

This shop is in fairly good repair all that at present appears necessary is the repairing of the chimney.

### THE DWELLINGS

I wish to especially call your attention to the very unsanitary condition of these houses: they were built about twenty-five years ago under the then idea of sanitary arrangements with the water

closets in the wood sheds, which has been so unsparingly condemned by Mr. St. George in his public reference to the sanitary condition of the houses of the afflicted Goose Village at Point St. Charles. In order that these houses be brought up to the present sanitary requirements, it will be necessary to build extension kitchens where closets and bath rooms could be placed. The repairs recommended to these buildings in my last year's report were not carried out. The windows, double windows and the whole outside wood work generally should be painted and the outside back stairs renewed, with some other minor repairs.

### **Nos. 1 & 2 ENGINE HOUSE**

This building is in good order and not likely to require any repairs during the year. An oil cloth on the floor would very much improve its appearance.

### **No. 3 ENGINE HOUSE**

This building is in good order, all the repairs that at present appear necessary is the painting of the outside of the three doors.

### **THE BOILER HOUSES**

Are in fairly good order with the exception of the floors of Nos. 2 & 3 boiler houses which are very much worn, they should be renewed.

### **THE COAL SHED**

A number of the upright cast iron posts were lifted and properly reset. The remainder will also be reset as soon as opportunities will permit.

### **THE GROUNDS**

are all uprooted, consequent upon the laying of the new mains. They should be thoroughly re-embellished. The bridge spanning the St. Pierre river on Atwater Avenue, in the immediate vicinity of the works, requires new planking. The Waste-Weir front of the Machine Shop had its covering renewed and is in first class condition.

### **No. 1 TURBINE WHEEL**

All the repair done to this wheel was the renewing of four of the stay bolts in one of the valve chests. The wooden cogs in the large bevelled wheel on the counter shaft are much worn and may require renewing before the close of the year. The wheel is otherwise in good order.



## No. 2 WHEEL

This Wheel has added another year to its existence, through being carefully nursed. The repairs are general, and often to all its parts, it seems to bear out the old adage that "creaking wheels last a long time on the road." Heavy repairs may be looked for at any time. A portion of the head race covering gave away. I had it all taken down and replaced in a substantial manner.

## No. 3 WHEEL

The pumps and connections of this wheel are like those of No. 2, very much worn and shaky, they are stayed and held together in every conceivable make shift manner, several of the joints connecting the pumps to the delivery pipes were remade and repaired. The anchor or holding down bolts were better secured and several of the joint bolts renewed. The plunger and plunger rod were taken out of the center pump, the plunger rod nuts being found to be split and the thread very much corroded. The rod had to be returned and furnished with new nuts. The water from the Tail Race is making its way through many of the joints of the foundation wall. Something will have to be done with this next summer.

## No. 4 WHEEL

This wheel worked well requiring only such repairs and attention as are consequent upon running machinery. There is a perceptible leak by the pump pistons which will be looked into at an opportune time.

## No. 1 WORTHINGTON ENGINE

This Engine did all the pumping by steam with the exception of sixteen days occasional runs by No. 3 Engine, and performed its duty well. It was stopped on the 7th of April, that date closing the winter pumping season. The engine was then very generally overhauled, one of the low pressure pistons was found in a leaking condition necessitating its being entirely refitted, which was done. The other low pressure piston was examined and its rings properly set out. The four steam chests had to be lifted and their joints re-made, between them and the cylinders, also two of the high pressure valve cover joints.

In order that this work should be done, a very general pulling down of the engine was necessary to get at the work. The jacket tank was looked into and the ball valve found out of order and was set right. The independent air pump gives considerable trouble through the breaking of the gland studs, several of which had to be renewed. The suction and delivery valves of the same

give trouble. We removed all the spiral springs from these valves and substituted for them lead weights, which we find a great improvement. The boiler feed pump broke one of the rock shafts, which was repaired and the pump otherwise generally overhauled. The giving out of this pump necessitates the stopping of the main engine until it is again put in working order, I hope you will find it convenient this year to furnish me with another boiler feed pump.

The engine and all its connections are at present time of writing in first-class order, ready to perform the winter work.

Present appearances indicate that all the attention the engine will require during the year in the shape of repairs is, that consequent upon the proper keeping up of running machinery, which will be considerable in this case owing to its magnitude, great complication, and many parts.

### No. 3 ENGINE

This engine did very little work during the year, No. 1 Engine being so much more economical, it is made to do all the pumping required by steam or as much as it possibly can do, No. 3 being kept in reserve. It is ready to do duty, but is in need of a very thorough overhauling. It is the practice in water works when the thorough overhauling of engines are required to give the job to the builders of the engines as they are especially conversant with their engines and carry into the engine, when overhauling, all the new features which they have added to their engines, or as much of them as the overhauling will permit of and have all the special appliances for the work. If myself and staff are expected to do this work I am ready to undertake it, but it will entail the long laying up of the engine as my staff can only be employed at it from time to time, as they may be spared from their other machinery.

I am of opinion that the work should be pushed through vigorously in order that the engine may be ready for service as soon as possible, there being no knowing when some other portion of our machinery may give out. The engine should also be painted.

### No. 1 BATTERY OR HEINE BOILERS

This battery furnished all the steam required for pumping during the year, with the exception of some sixteen days run, made by No. 2 Battery, and worked well. The damper in the main flue was of poor construction, it buckled so as to be unserviceable. I had it taken out and flanged with one and one half inch angle iron. It was again put in position and has given no trouble since.

A set of Elliott grate bars was furnished, and shortly afterwards removed to make way for the Leadbeater appliance, which appliance enabled us to burn coal that we were unable to burn previous to its adoption. This appliance is very hard on fire brick, in consequence of which we have to frequently rebuild our boiler furnaces and the bridge walls. The great draft furnished to the boilers by the steam jets, forces the smoke through every crevice around the boiler setting into the boiler room, from which it finds its way into the engine room, blackening the walls and ceiling, making it difficult to keep the place clean. Still if I am to continue to burn International coal, I want another Leadbeater furnace applied to the other Heine Boiler, and that, as soon as possible. If I am furnished with Scotch coal, I don't want it.

### **No. 2 BATTERY OF BOILERS**

This battery is in good order, all that will be necessary is the taking down of the main steam pipes and remaking the joints.

### **No. 3 BATTERY OF BOILERS**

This battery did not work during the year. The boilers are in good order, cleaned, oiled and properly laid up.

### **THE PORTABLE STEAM PUMP AND BOILER**

This pump performed considerable good service adjacent to the works at the laying of the 30" mains after which it was properly laid up. It is in good order, ready for service.

The change and addition you have made to the pumping mains in the vicinity of the works have had the effect of lowering the pressure 10 lbs per sq. inch on all our pumping machinery which is of great and substantial importance, it being equivalent to the adding of 11½% to the hydraulic working under the old condition.

In conclusion I beg to tender you my warm thanks for the able and valuable assistance you so cheerfully gave me from time to time, in the discharge of my duty.

The whole respectfully submitted,

I have the honor to be Sir,

Your obedient servant,

D. KEARNEY,

*Engr., L. L. P. W.*

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## HIGH LEVEL PUMPING STATION, McTAVISH STREET

JANUARY, 1890.

B. D. McCONNELL, Esq.,

*Supt. Water Works.*

SIR,

I respectfully beg to submit my annual report on performance of work done, condition, and requirements at McTavish street, and High Level Reservoirs.

## THE WORTHINGTON ENGINE

Is in the same condition as last year, and requires but a few light repairs: it worked about one week last summer during the cleaning of High Level Reservoir.

## THE GILBERT ENGINE

Has worked well throughout the year, and gave no trouble other than the cracking of cover of the condenser, caused by unequal shrinkage of the casting; and the shifting of 6 tubes in condenser, caused by expansion and contraction of the tubes by heat and cold. We had them set back and the ends riveted or beaded to prevent them shifting again. The engine is working every day. I put 24 brass valves into high pressure pump a year ago, they have worked well and show very little sign of wear. I renewed 62 rubber valves and 2 springs during the year. The steam pipe would look much better if covered with cotton cloth and painted.

I would recommend the purchase of the big plungers from Mr. Gilbert, as they are fitted to the pumps and we would have no delay in case we wanted to increase the pumping capacity.

## THE BOILER

is in good condition, and worked well last year, we renewed two tubes in the water heater.

We got a Leadbeater patent steam jet put on the boiler to increase draft and burn inferior coal; it has worked well.

I think it would be advisable to get another boiler for reserve, it is not safe to depend on one only.

## THE OLD ENGINE HOUSE

The walls require whitewashing, and the wood work to be varnished. The cement water-course around outside of building is

broken up with frost, and will require to be renewed. I think wood blocks the best.

### THE BOILER HOUSE

is badly in need of a floor of flagstone or cement, and 2 new porches, a ventilator in roof to let out coal gas, and an ashpit. The banks in front of this building require grading and sodding.

We want an iron door for base of chimney, also a tapering cap for top of chimney to decrease the outlet and increase draft.

### THE NEW ENGINE ROOM

This building is in good repair, the cornice outside and the new porch require painting. I would require a pair of travelling cranes and a set of cupboards in this building and to get the floor covered with oil cloth or painted.

### THE COAL SHED

The roof of this building is leaking badly and requires to be fixed this coming summer, the cornice to be painted and a concrete floor laid.

### THE TELEPHONE

has worked very poorly during the past year, and our communications with the wheel-house since the circuit was changed, have been anything but satisfactory.

### THE HIGH LEVEL RESERVOIR

underwent a thorough repair; the joints pointed and grouted with cement; it was washed out and swept.

The 12 inch iron over flow pipe should be continued from foot of bank slope to Pine Avenue, the tiles in use at present are defective and leaking. A new door is wanted for Valve House, also to paint door.

Owing to the increase of consumption on the High Level Service, it would be an improvement to continue the 20 inch main pipe to the High Level Reservoir, or at least to corner of Pine Avenue and Peel Streets. At present there is but one 12 inch main from Engine house on McTavish Street, which has to furnish three 12 inch pipes on Pine Avenue, this change would relieve the pressure on our pumps by about 15, lbs to the square inch.

### McTAVISH RESERVOIR

The old portion or front wall underwent a thorough repair: the joints all grouted and pointed with cement, and is now in good

order; but the old portion of the centre wall requires a thorough cementing, it leaks so badly from one side to the other, that we cannot make a reserve in either. The waste water drain was trapped in McGill College Grounds, to prevent foul gas coming into the Valve House, it has been a success, so far.

The front wall on Carleton Avenue needs repairing, also to have same all capped or covered down with boards, the same to be tarred to protect them from the weather, it will require about 400 one inch boards and 50 three inch planks: the old covering is all rotten.

The Reservoir wants cleaning this summer, there is about 3 inches of mud at the bottom, it has not been cleaned since 1877.

The flagmast requires a coat of paint, and new halyards. I would like a small boat for north side of reservoir.

There is a leakage through masonry at back side of reservoir which admits surface water, this would require to be dug out, pointed and puddled with clay.

## THE VALVE HOUSE

The walls outside want pointing, the roof, cornices and ceiling, want painting and the doors and windows to be oak grained. The covering over wells wants to be renewed, the old boards are dangerous to walk on, it is very important that these wells be covered anew.

The iron ladder in dry well requires a coat of paint. The flood gates in valve house should be renewed.

The grounds, banks and slopes were kept in good order, the grass kept cut and clean; it would be well to place a dozen benches on the reservoir bank, the old ones are decayed and broken.

An electric light placed in front of Valve House would add much to the comfort of visitors who sit around in the evenings, and would be of great benefit to us.

The wooden fence around reservoir property, on McTavish Street, Pine and Carleton Avenues, wants to be straightened and painted, a wire fence at north side of reservoir would be much needed to keep people off grass slopes.

The Scale House requires a new floor; the scales to be overhauled and inspected,

The Dwelling is in good repair, except a portion of the plaster in hall which is loose and liable to fall any moment. The drain pipes from Bath room must be seen to as soon as possible as they are somewhat defective and cause a very bad smell throughout the house. A new set of heating pipes will soon be required, the present ones are getting old and leaky.

The window blinds, sashes, and cornice of dwelling want painting; the sashes and blinds of the buildings number about 40 of each.

The whole respectfully submitted,

I have the honor to be, Sir,

Your obedient servant,

JAMES COLEMAN

---

The following will be required for the ensuing year:—

400 tons American Coal.  
 15 “ stove “  
 6 brls. Valvoline.  
 400 lbs. Cotton waste.  
 75 “ 1 in. Asbestos packing.  
 50 “  $\frac{1}{2}$  “ “ “  
 50 “ Flax packing.  
 1 doz guage glasses.  
 2 “ rubber washers.  
 12 lbs Asbestos cardboard.  
 3 tube cleaners  
 1 set rubber valves for pumps.  
 12 lbs. Plumbago powder.  
 5 lbs. Redlead.  
 6 doz. Mudport rubber washers.  
 2 “ Rubber washers for oil caps.  
 6 balls Asbestos wick.  
 10 yards Tape for joints.  
 6 balls cotton wick.  
 1 doz. small mops for oiling engine.  
 50 lbs. Whitelead.  
 5 Gals Paint oil.  
 1 Bbl. Coal Oil for cleanng machinery.  
 2 “ Boiler Compound.  
 4 Quires Emery cloth F.  
 $\frac{1}{2}$  doz. Files.  
 2 Gals turpentine.  
 10 lbs Copperwire for valve guards.  
 300 Fire bricks.  
 2 Bags Fire Clay.

1 Set Grate bars.  
 2 Bbls. soft soap.  
 12 doz. Concentrated Lye.  
 6 Deck Scrubbers.  
 1 doz. corn brooms.  
 1 Set Taps and dies for gaz pipe.  
 1 Pipe cutter and gas tongs.  
 1 Pive Vice.  
 2 Coal Scoops.  
 1 doz. Snow shovels.  
 1 Small Boat for Reservoir.  
 3 Yards Brass Wire cloth (sundries).  
 2 Gals. Olive Oil for handlamps.  
 50 Stove pipes.  
 12 Elbows.  
 60 Yards Cotton cloth to cover steampipes.  
 7 Cords firewood.  
 2 Yards Rubber cloth.  
 1 Sheet iron lining for chimney top.  
 1 Cast iron door for base of chimney.  
 1 Double porch for boiler house.  
 Keeping grass cut & cleaned, and grounds clean.  
 The big plungers to be purchased from Mr. Gilbert.  
 A new boiler (extra one).  
 2 Travelling cranes for Engine room.  
 1 doz. Benches for reservoir banks.  
 New cupboard for engine-room.  
 1 Ash pit.  
 Painting floor of new engine room.  
 Floor for boiler room; repairing, grading & sodding of banks in front of building.  
 Repairing water course around engine house.  
 2 File Brushes.  
 2 Ventilators in roof, engine room & b. r.  
 Varnishing & whitening old engine room.  
 Repairs to Worthington engine.  
 Repairs to roof of coal shed & painting cornice.  
 New door for H. L. valve house and painting same.  
 Boards to cover front wall at McT. reservoir tarring same, men's time.  
 To clean Reservoir.  
 Paint flagmast, and new halyards.  
 To paint valve house and fix walls.  
 Covering wells & paint iron ladder in well.  
 Renew floodgates.  
 An electric light (this would also light Carlton Ave).  
 Straighten & paint fence on McTavish St. Carlton & Pine Avenues.



**A wire fence for north side of reservoir slope.**

**New floor for scale house and fix scales.**

**To fix plaster and drain pipes in dwelling.**

**A set of steam pipes for dwelling.**

**To paint blinds and sashes.**

**To fix centre wall & back side of reservoir.**

**Painting cornice & porches of engine house.**

**Iron pipes for high level over flow 600 ft.**

**JAMES COLEMAN.**



## WATER WORKS SHOP. FEBRUARY, 1890.

B. D. McCONNELL, ESQ.,

*Superintendent Water Works.*

DEAR SIR,

I respectfully submit the report on the repairs done to main pipes, Stop-valves, Hydrants, Service-pipes : and Improvements to main pipes etc., during the year ending December 31st. 1889, which are as follows :

## REPAIRS TO MAIN PIPES, STOP-VALVES &amp;c.

There have been twenty breaks on main pipes and eighty-five joints blown out on said mains. Twenty-seven Stop-valves were renewed. Four valve spindles were broken and replaced by new ones.

Schedule No. 6. Shows the sizes and number of main pipes, and valves repaired. Also the number of leaks on mains and valves, which were one hundred and forty. Schedule 9 shows the improvements made to main pipes.

The improvements made on main pipes for the last six years, have given very good satisfaction : and the Firemen alway's find a plentiful supply of water at fires, where ever those improvements were made. More of those improvements are still required and in many streets, the main pipes should be renewed and replaced by larger ones. The main pipes in the following streets should be renewed before permanent pavements are made :

College street from McGill to Inspector streets.

St. Maurice street from McGill to Inspector streets.

St. Helene street from Notre-Dame to Lemoine.

St. Denis street from Craig to Albina.

Sherbrooke street from St. Denis to near McGill College ave.

The water Department should be notified twelve months before any streets are paved and no permanent paving should be made in any streets before all the water pipes are reported in good order.

The 4" main on Durocher street should be replaced by a larger one as it is now very defective from Sherbrooke street to Prince Arthur street.

The main pipes in the following streets are too small and defective and should be replaced gradually, year after year until all are renewed : renewing the most defective first.

Colborne street 4" & 6" mains from Notre-Dame street to Wellington street. This should be replaced by a 12" pipe.

Eleonor, from Notre-Dame to Ottawa streets.

Murray, from Notre-Dame to McCord streets.

Smith, from McCord to Colborn streets.

Young, from William to Wellington street.

Shannon, from half way below Ottawa to Wellington.

Ann, from William to lane below Brennan.

Nazareth, from William to Common.

Dalhousie from Wellington to Common.

Duke, from College to Common.

Prince, from Wellington to Common.

Queen, from William to Ottawa.

King, from William to Common.

Grey-Nun, from William to Common.

St. Peter street 10" main should be extended from St. Paul street down to the intersection of Common and Youville streets 12' main; Youville street main should be extended to McGill street 10" main.

A 6" main should be laid on Seminary street from McCord to Olier street.

Basin, from St. Augustin to Seminary.

Olier street 4" main could then be connected to Seminary street. As it is now, when we shut McCord street all that district is without water and if the proposed improvements were made on Seminary, Basin, Olier streets, this much complained of inconvenience to the people would be avoided.

A 12" valve should be put on the 12" main on Wellington street east of the Grand-Trunk Railway connection so that we could shut Wellington street main any time, without causing any inconvenience to the Grand-Trunk Works near Sebastopol street. An 8" valve should be put on St. James street 8" main pipe North-west corner of St. Gabriel street so that we could shut the 8" pipe without shutting the 4" on the south side of St. James street, as it is now, one cannot be shut without shutting the water to both sides of said street.

A 10" valve should be put on Notre-Dame street 10" main west of St. Vincent street; as it is now we must shut from Notre-Dame Church to Bonsecours street.

A 30" valve should be put on Sherbrooke street 30" main pipe at the east side of St. Famille street.

The present shutting on the 30" main is from McGill College Avenue to St. Denis street.

A 12" valve should also be put on Dorchester street 12" main corner Windsor street.

The proposed 24" main pipe on Guy and St. James street should be laid as soon as possible, and the 24" Pipe Track should be carried by some street down to meet the 24" pipe at Delorimier Ave. and Notre-Dame street. This is very important for many reasons which I leave to you, Sir, to explain.

The two inch water-pipe in St-Jean-Baptiste street, should be replaced by a 4" pipe from St. Urbain street 12" main to the hydrant on Park Ave.

Fripponne street old 10" pipe (bad) should be replaced by a 6" pipe and connected to St. Paul and Commissioners streets; there are two dead ends on it now.

The main water pipes in the following streets have all dead ends.

|  |   |
|--|---|
| Archambault Lane off Fullum street .....     | 1 |
| St. Albert street St Gabriel Ward.....       | 1 |
| St. Albert street off Fulford street.....    | 2 |
| St. Albert street off Guy.....               | 1 |
| St. Albert street off Canning street.....    | 1 |
| St. Albert lane off Delorimier Ave.....      | 1 |
| Arcade street off Guilbault street.....      | 1 |
| Argyle Ave.....                              | 2 |
| Basin street west of Seigneurs.....          | 1 |
| Barré street west of Hydrant at end.....     | 1 |
| Bourgeois street off Wellington.....         | 2 |
| Baxter Lane.....                             | 1 |
| Berri above Roy street.....                  | 2 |
| Berri above Ontario street.....              | 1 |
| Beaudry near Sherbrooke.....                 | 1 |
| Burnett off Delorimier Ave.....              | 1 |
| Chatham near William.....                    | 1 |
| Coursol at west limits.....                  | 1 |
| Cote des Neiges Hill.....                    | 1 |
| Congregation street near Leber.....          | 1 |
| Charron below Favard.....                    | 1 |
| Capital west of Custom House Square } .....  | 1 |
| Custom House Square east side } .....        | 1 |
| Concord street off Bleury.....               | 1 |
| Church St. off Ontario.....                  | 1 |
| Cathcart street at Philips Place.....        | 1 |
| Champlain and Mount-Royal ave.....           | 1 |
| Contant lane off Campeau street.....         | 1 |
| Chaussé above Sherbrooke.....                | 1 |
| Delisle street off Fulford.....              | 2 |
| Duke street between William and College..... | 2 |
| Donegani street off Windsor.....             | 1 |
| David Place off David lane west.....         | 1 |
| Devienne street near St. Philip.....         | 1 |
| Dufferin street and Mount Royal Ave.....     | 1 |
| Dubord street near east of St. Denis .....   | 1 |
| Desery street north of Ontario.....          | 1 |
| Drummond north of Sherbrooke.....            | 2 |
| Essex avenue near Quiblier.....              | 1 |
| Edge Hill Ave. off Dorchester.....           | 1 |
| Forgue Ave. off Guy.....                     | 1 |
| Fortier street east of German.....           | 1 |

|   |   |
|---|---|
| Fullum street near Sherbrooke.....              | 1 |
| Fullum lane off Fullum above Ontario.....       | 1 |
| Grand Trunk street west end.....                | 1 |
| Guy Ave. off Guy street.....                    | 1 |
| Grothé lane off Mignonne street.....            | 1 |
| Gain street north of Dorchester.....            | 1 |
| Gain st. near Lafont.....                       | 1 |
| Gain street north of Ontario.....               | 1 |
| Harmony street off Amity.....                   | 1 |
| Hudon street off Desery.....                    | 1 |
| Jean Lane off Archambault near Fullum.....      | 1 |
| Jacques-Cartier south of Notre-Dame.....        | 1 |
| Lagauchetière east of Papineau Sq.....          | 1 |
| Lafontaine west of Dufresne.....                | 1 |
| Larivière lane south of Sherbrooke.....         | 1 |
| Lorne Crescent Av. off Prince Arthur.....       | 1 |
| Leroux lane off Seigneurs.....                  | 2 |
| Monette Lane off Versailles.....                | 1 |
| Montmorenci off Centre.....                     | 2 |
| Mullins street near Napoleon Road.....          | 1 |
| Mullins st. near and east of Hibern.....        | 1 |
| Manufacturer street near Atwater avenue.....    | 1 |
| Magdalen street near Leber.....                 | 1 |
| Magdalen near Grand Trunk track.....            | 1 |
| Maple Ave. off Mullins.....                     | 1 |
| Milton street off Park Ave. and St. Urbain..... | 3 |
| Marie Louise Lane, off Sanguinet.....           | 1 |
| Maisonneuve and Marie-Ann.....                  | 1 |
| Monarque, south of Notre-Dame.....              | 1 |
| Montcalm near Sherbrooke.....                   | 1 |
| Maisonneuve below Sherbrooke.....               | 1 |
| Moreau street at Small Pox Hospital.....        | 1 |
| Mitchison Ave. off Cuthbert street.....         | 1 |
| Mount-Royal Ave. and St. Hubert.....            | 1 |
| Nelleda Lane, off Dufresne.....                 | 1 |
| New lane off Shaw below St. Catherine.....      | 1 |
| New lane off St. Urbain above Milton.....       | 1 |
| Ontario Ave. off Sherbrooke.....                | 1 |
| Olier street off McCord.....                    | 1 |
| Oxenden Ave. off Prince Arthur.....             | 2 |
| Ontario street west of Dezery.....              | 1 |
| Overdale Ave. off Aqueduct street.....          | 1 |
| Ontario west of Moreau.....                     | 1 |
| Patterson Ave. off Burnette street.....         | 1 |
| Prefontaine street off Notre-Dame.....          | 1 |
| Poupart street south of Logan.....              | 2 |
| Papineau Square west side.....                  | 1 |

|  |   |
|--|---|
| Paxton Ave. off Richmond .....                   | 1 |
| Plessis street below Sherbrooke.....             | 1 |
| Panet street below Sherbrooke....                | 1 |
| Picard lane off Sanguinet.....                   | 1 |
| Perrault lane east of St. Dominique.....         | 1 |
| Phillips lane off Sanguinet.....                 | 1 |
| Plessis and Marie-Ann.....                       | 1 |
| Platt street off Ontario.....                    | 1 |
| Plateau street off Mance.....                    | 1 |
| Pea lane off Roy lane.....                       | 1 |
| Pichette lane off Barre street.....              | 1 |
| Plymouth Grove off Canning street.....           | 1 |
| Quesnel street western limits.....               | 1 |
| Quiblier street off Fort and Sussex streets..... | 2 |
| Rosary street off Wellington.....                | 1 |
| Richmond street Pointe St. Charles.....          | 2 |
| Richmond street near St. James.....              | 1 |
| Richmond street near William.....                | 1 |
| Redpath Ave. near Pine ave.....                  | 1 |
| Seaver street near Robillard.....                | 1 |
| Sherbrooke near Shaw .....                       | 1 |
| Shaw north of Ontario street.....                | 1 |
| Shaw street near Lafontaine.....                 | 2 |
| Sherbrooke street near Montcalm.....             | 1 |
| Seaton street and Marie-Ann.....                 | 1 |
| Sophia lane off Craig.....                       | 1 |
| Sebastopool street near Leber.....               | 1 |
| Stanley street near St.-Catherine N. S.....      | 1 |
| Stanley street above Sherbrooke.....             | 1 |
| Summerhill Ave. off Guy street.....              | 1 |
| Sussex Ave. near Quiblier street.....            | 1 |
| St. Luke near Atwater Ave.....                   | 1 |
| St. Martin north of St. Antoine.....             | 1 |
| St. Charles near Atwater Ave.....                | 1 |
| St. Agnes street off Farm street.....            | 1 |
| St. Chas Borromée near Milton .....              | 1 |
| St. Lawrence street and Mount-Royal Ave.....     | 1 |
| St. Dominique and Mount-Royal Ave.....           | 1 |
| St. Hypolite and Mount-Royal Ave .....           | 1 |
| St. Hypolite street above and below Ontario..... | 2 |
| St. Christophe north of Ontario.....             | 1 |
| St. André lane east of St. André street.....     | 2 |
| St. Mathew lane north and south of Ontario.....  | 2 |
| St. Catherine street east of Darling.....        | 1 |
| St. Constant street at Ontario.....              | 1 |
| St. Pierre lane off Mignonne street.....         | 1 |
| St. Julie lane off St. Denis .....               | 1 |

|   |       |
|---|-------|
| St. Roch street west of Poupart.....          | 1     |
| Torrance street near Mountain.....            | 1     |
| Victoria Square west side near St. James....  | 1     |
| Woodyard lane south of Notre-Dame street..... | 1     |
| Wellington street west of toll gate.....      | 1     |
| Workman street west limits.....               | 1     |
|   | <hr/> |
|   | 161   |

It will be very important for the health of the people living in the districts where those dead ends are, that immediate means be taken to keep the water pure in the pipes.

Therefore I strongly recommend that all such pipes be extended and connected to the nearest street possible, and to put a hydrant on every end of those that cannot be thus connected. The hydrants would be sufficient to clear the water any time it is found necessary. We may have to change the position of some hydrants and that will cause some extra expense ; but the importance of the case should rule all consideration.

### HYDRANT REPAIRS &c.

One hundred and eighty hydrant valves were renewed. Two hundred and sixty-seven hydrants were reported frozen, seven hundred and ninety-one times during the winter 1888 and 1889.

All the hydrants on the line of the new laid main pipes were renewed.

The hydrants on Mill street were also renewed and three extra ones put in.

Five nozzle hydrants were placed in several parts of the City.

|   |       |
|---|-------|
| The number of five nozzle hydrants put in was.....                              | 89    |
| The number of two nozzle hydrants put in was.....                               | 105   |
| The number of patent hydrants in position up to January 1890 is (2 nozzle)..... | 455   |
| Five nozzle hydrants now in position.....                                       | 153   |
|   | <hr/> |
| Total number of patent hydrants in position.....                                | 608   |

Schedule No. 6. Shows the number of new hydrants put in and also the repairs done to the old ones. It also shows, that twenty-one hydrants rods were broken and renewed and that one hundred and eighty-four leaks were repaired on the hydrants.

Five nozzle hydrants should be put in the following streets.

McGill and Recollet street.

Wellington and Murray.

Wellington and Mullins.

Ottawa and Young.

Notre-Dame and Dufresne.

St. Denis street opposite Deaf and Dumb Asylum, corner Roy.

Carleton Road opposite Reservoir valve house.

Ontario corner Bleury or opposite Plateau School.

St. Catherine street at Atwater Ave. square.

Dorchester and Guy opposite Grey-Nuns property.

Notre-Dame near "Ruisseau Migeon" opposite the Nun's property. The drinking tap on Commissioners street opposite the middle of Bonsecours Market, should be taken away and a horse trough and drinking tap put in its place.

Respectfully submitted,

Your obedient servant

CHAS LAGACÉ.

*Foreman.*

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## AQUEDUCT M. W. W.

ROCK GATES, JANUARY 15TH 1890.

B. D. McCONNEL Esq.,

*Supt. M. W. W.*

DEAR SIR,

The repairs done on the Aqueduct during the past year were as follows. The usual repairs to fences and approaches to bridges. A new bridge was made on Mrs. Greenshield's farm ; Crawford's, Crosse's, Mann's and Stephenson's Bridges, were jacked up and repaired, the cuts in the banks near the junction were filed up and repaired also the Banks were repaired and filed up on Aqueduct between Rock gates and stone bridge. The ditch along Brault's & Stephenson's farm was cleaned, the line ditch on Inland Cut along Parker's, Robert's and Dunn's farm was cleaned ; the Guardian's house was repaired, gravel roofed and painted, also the usual cutting of weeds.

The necessary repairs for the ensuing year will be a new bridge at Crawford's and Stephenson's farm, the crib work at Stephenson's and Crosse's bridges is very bad and will need to be rebuilt ; the regulating gates bridge on Inland Cut will need to be planked and Peniston's bridge will require planking and jacking up. the Culverts on Dunberry's road will need to be taken up and rebuilt. The banks on Inland cut south side between junction and regulating gates have to be repaired and some of the earth removed, as it is too high. There are several cuts in bank on Inland cut between regulating gates and entrance, which need filling up badly, the line ditch along the lane from Parker's will need to be cleaned, also berm ditches on Inland cut and berm ditches on old Aqueduct. The ditches from Culvert on both sides of Greenshield's and Crawford's farms to Guy's as they are complained of by Mr Crawford also Crawford's road will require repairing. The cap fence from line of Robert's fence also along Parker's road would need to be made into a picket fence and also the cap fence along McDonnell's and Sommerville's farms. The masonry on Culverts will need to be repaired and pointed also the usual repairs to fences and cutting of weeds.

The whole respectfully submitted.

I have the honor to be, dear Sir,

Your obedient servant,

EDWARD SALLEY,

*Guardian of Aqueduct.*

## ANALYSIS OF WATER.

I the undersigned C. A. Pfister, chemist in Montreal, certify having examined and analysed 3 samples of water which have been sent to me in October last by Mr. J. O. A. Laforest deputy superintendent of Montreal Water Works.

Each sample was contained in 2 large bottles of a capacity of near 2 gallons each ; these bottles were numbered per couple A, B and C.

The physical and organoleptical characters of the samples are :

1° In common and at the arrival:—

Water uncolored, inodorous, fresh and agreeable taste, aerated (from 26 to 30 cubic centimetres of atmospheric gases or from 7.21 to 8 32 cubic inches per gallon).

Light matters in suspension but do not trouble the liquid.

2° After a month :—

The 3 samples. No disagreeable odor except what is called “*odeur de renfermée*” (the water was kept in corked bottles.)

But we can remark that :—

Water A tasted slightly unsavory. The sediments, brownish gray, pretty abundant on the bottom of the bottle, examined with the microscope abounds with microbial infusoria, bacteria, such as micrococcus, bacillæ and vibrio, etc., spombs.

Water B tasted more agreeable to drink than the preceding one. The sediments brownish white, examined with the microscope contains also organised matters but very little infusoria.

Water C slight taste, notably different from A. less agreeable than B, seems harder to the taste. The sediments which are whitish brown, if examined with the microscope are found more charged with infusoria than the preceding B, but less than A.

Summing up, the taste of B is the most agreeable after a month of sojourn in corked bottles.

## THE ANALYSIS FURNISHED THE FOLLOWING RESULTS :

| SAMPLE A.   | Gram. per litre<br>or prop. pr. 1000<br>of water<br>in weight. | Grains per<br>gallon. |
|---|--|-----------------------|
| The solid constituents simply dessicated at<br>100° C. or 212° F..... | 0.0970   | 6.801                 |
| Carbonate of calcium.....   | 0.0377   | 2.643                 |
| “ magnesium.....  | 0.0080   | 0.561                 |
| Chloride of sodium.....   | 0.0035   | 0.245                 |
| Calcic sulfate.....   | 0.0282   | 1.977                 |
| Silica etc.....   | 0.0004   | 0.028                 |
| Whence, mineral matter.....   | 0.0778   | 5.455                 |

| SAMPLE B.  |        |       |
|--|--------|-------|
| The solid const. simply dess. at 100° C. or<br>212° F..... | 0.0855 | 5.995 |
| Calcic carbonate.....                                      | 0.0329 | 2.307 |
| Magnesium.....   | 0.0140 | 0.982 |
| Sodic chloride.....  | 0.0036 | 0.252 |
| Sulfate of calcium.....                                    | 0.0238 | 1.669 |
| Silica.....  | 0.0003 | 0.021 |
| Whence, mineral matter.....                                | 0.0746 | 5.231 |

| SAMPLE C.   |        |       |
|---|--------|-------|
| The sol. const. simply dess. at 100° C. or<br>212° F..... | 0.0985 | 6.906 |
| Carbonate of Calcium.....                                 | 0.0371 | 2.601 |
| “ “ Magnesium... ..                                       | 0.0123 | 0.862 |
| Chloride of sodium.....                                   | 0.0036 | 0.252 |
| Sulfate of calcium.....                                   | 0.0387 | 2.714 |
| Silica acid and sand.....                                 | 0.0003 | 0.021 |
| Whence, mineral weighed matter.....                       | 0.0920 | 6.451 |

No apparent traces of ammonia, ammoniacal salts or nitrogenous matters in solution.

Traces of alumina and iron have been found in the 3 samples but in such a small quantity that it could not be appreciated. Same remark for potassium.

**Conclusions.**—The 3 samples considered as potable water are remarkable for the scarcity of mineral substances. None of them attaining the proportion of 0.1gr. per litre (7 grains per gallon) while the normal average of potable water is from 0.13gr. to 0.50gr. (9 to 35 grains per gallon.)

From another point of view these waters are excellent because of their low hydrotimetric degree which renders them suitable for dissolving soap etc.

Could be advantageously cleared, (specially the sample A,) of the organic matters in suspension.

If obtained from river, their composition necessarily varies with the falling of rain, melting of snow, the considerable changes in the temperature, consequently the seasons, their passage through cities, sojourn in reservoir, surface of contact etc.

Montreal, December 17th—89.

(signed)

C. A. PFISTER,

Professor of chemistry, Laval University, Faculty of arts—  
Polytecnic school—Montreal college of Pharmacy.

|          |   |  |
|----------|---|--|
| N.B.     | { | SAMPLE A—From High Level service, taken from corner of St. Dominique and Rachel streets. |
| J.O.A.L. |   | SAMPLE B—From Low Level service, taken from corner Notre-Dame and Canning streets.       |
|          | { | SAMPLE C—From St Cunegonde, taken from corner of Notre Dame street and Napoleon Road.    |

## IMPROVEMENTS NEEDED.

MONTREAL, October 22nd 1889.

*The Chairman and Members of the Water Committee.*

GENTLEMEN,

I consider it my duty to draw your attention to certain matters, concerning the plant of the Water Works, which seem to require your consideration.

The first is, the condition of the Breast Wheel and the six bucket and plunger pumps. These you are aware have been in use since the existing system of works was inaugurated (upwards of 30 years ago) and as might be expected they show signs of decay. The pumps are much worn. The Breast Wheel is quite rickety, the arms and braces being loose in their sockets. A break down at any time would not be surprising. The wheel and pumps should be taken out and replaced by a turbine wheel and by pumps of the ordinary plunger type, set horizontally, on the floor, instead of in the pit. They should also be of greater capacity, say  $\frac{1}{2}$  more, than the old pumps, as there are times when there is water power to spare, which might be utilized in this way, instead of being wasted, as with the present arrangement. These alterations would leave room in the building for another turbine and pumps.

The next point I would draw your attention to, is one on which I reported last February, viz; the fact that in case of the wheels being stopped for want of water power, the City would be dependent on two steam engines, neither of which singly is capable of furnishing the full supply, and either of which might require at any time, to stop for repairs. Last winter the water being very low in the Aqueduct, No. 1 Engine supplemented the supply from the wheels, working night and day, from 23rd February to 24th March. If this engine had become disabled, the other one could not have furnished the requisite quantity of water and there would have been a daily deficit of about 4 million gallons.

I may remind you that the Mayor in his inaugural address last March, referred very forcibly to the condition of things here alluded to, and recommended that prompt action should be taken to secure more pumping power. It seems therefore advisable, that unless the large aqueduct talked of, is to be speedily built, more steam power should be provided.

Where the Pavillon Road crosses the aqueduct, there is a stone bridge of two spans, the pier of which bridge, in the winter time, is a serious obstruction to the water way. It would be a great

improvement to remove the centre pier and put iron girders, from one abutment to the other.

The next matter I have to mention is the need of another lathe, at the workshop of the Wheel House. Both last year and this for want of another lathe, a great deal of work had to be given out, which might have been done on the premises, more cheaply and quite as well. I asked for this lathe, early last spring, and as it could not be got then, I consider it proper to remind your committee of the need there is of getting it as soon as possible,

Another feed pump, for No. 1 Engine is also desirable as a long run with the Engine might easily be interrupted, by the feed pump requiring re-packing or other repairs.

Coming now to the High Level Pumping station, I beg to remind you that here we have but one boiler. These works have now been carried on about 12 years with one boiler and have not, on that account, ever been obliged to stop pumping. That however is not an argument likely to convince any person, that it is safe to be without a second boiler and in fact, works for the supply of water to so important a City as Montreal, ought to be on a sufficiently liberal scale, to make their uninterrupted operation, beyond peradventure. I would therefore beg leave to suggest that a second boiler be added to the plant, at this station.

Should the foregoing suggestions, or any of them, meet the approval of your Committee, it would be advisable to have approximate estimates of cost made out, in order to ask council for the necessary funds.

I have the honor to be, Gentlemen,

Your obedient servant,

B. D. McCONNELL,

*Supt. M. W. W.*

No. 1—SCHEDULE SHOWING THE WORK OF WHEEL No. 1 (TURBINE.)

| MONTHS.        | Time of<br>pumping. | Revolu-<br>tions. | Gallons<br>pumped. | Pressure<br>in air<br>Vessel. | Castor oil. | Tallow. | Coal oil. | Cotton<br>Wasto. | Coal for<br>Heating. |
|----------------|---------------------|-------------------|--------------------|-------------------------------|-------------|---------|-----------|------------------|----------------------|
|                | Hrs. M.             |                   |                    |                               |             |         |           |                  |                      |
| 1889.          |                     |                   |                    |                               |             |         |           |                  |                      |
| January.....   | 744.00              | 571,608           | 133,184,664        | 84                            | 135.00      | .....   | 189.00    | 23.81            | 93160                |
| February.....  | 633.50              | 411,994           | 95,994,602         | 80                            | 112.50      | 36.00   | 117.00    | 25.62            | 96180                |
| March.....     | 633.00              | 203,005           | 47,300,165         | 69                            | 83.25       | 10.00   | 106.00    | 27.44            | 81140                |
| April.....     | 709.20              | 557,208           | 129,829,464        | 88                            | 135.00      | .....   | 146.00    | 26.25            | 53240                |
| May.....       | 710.55              | 569,166           | 132,615,678        | 88                            | 137.25      | 40.00   | 144.00    | 26.50            | 7450                 |
| June.....      | 720.00              | 561,377           | 130,800,841        | 89                            | 135.00      | 40.00   | 125.00    | 26.44            | .....                |
| July.....      | 743.00              | 593,485           | 138,282,005        | 87                            | 139.50      | .....   | 124.00    | 27.50            | .....                |
| August.....    | 703.35              | 536,375           | 124,975,375        | 84                            | 135.60      | 50.00   | 134.00    | 27.44            | .....                |
| September..    | 720.00              | 509,856           | 118,796,448        | 87                            | 153.00      | 40.00   | 151.00    | 28.62            | .....                |
| October.....   | 744.00              | 515,511           | 120,114,063        | 86                            | 139.50      | .....   | 186.00    | 24.62            | 52530                |
| November.....  | 719.10              | 507,388           | 118,221,404        | 86                            | 135.00      | 40.00   | 182.00    | 26.50            | 73360                |
| December.....  | 512.45              | 399,558           | 93,097,014         | 82                            | 99.00       | .....   | 199.00    | 32.69            | 90070                |
| Total.....     | 8293.35             | 5,936,531         | 1,383,211,723      | .....                         | 1,539.00    | 256.00  | 1,803.00  | 323.43           | 547130               |
| Average .....  | .....               | .....             | .....              | 84                            | .....       | .....   | .....     | .....            | .....                |
| Last year..... | 7585.35             | 5,703,354         | 1,328,881,482      | .....                         | 2,082.50    | 293.00  | 1,709.00  | 307.79           | 492300               |

No. 2—SCHEDULE showing the work of the Wheels No. 2 (Breast) and Nos. 3 &amp; 4 (Turbines).

| MONTHS.                    | Time of Pumping |         |         | Revolutions.  |           |           | Gallons pumped. | Pressure in air Vessel. | In pounds  |          |               |
|----------------------------|-----------------|---------|---------|---------------|-----------|-----------|-----------------|-------------------------|------------|----------|---------------|
|                            | Turbine         |         |         | Breast Wheel. | Turbine.  |           |                 |                         | Castor oil | Coal oil | Cotton waste. |
|                            | No. 2           | No. 3.  | No. 4.  |               | No. 2.    | No. 3     |                 |                         |            |          |               |
| 1889.                      | Hrs. M          | Hrs. M  | Hrs. M. |               |           |           |                 |                         |            |          |               |
| January .....              | 703 30          | .....   | 450 20  | 571,213       | .....     | 471,250   | 125,067,024     | 79                      | 128.25     | 189 00   | 31.50         |
| February .....             | .....           | .....   | 339 10  | .....         | .....     | 376,742   | 32,399,812      | 80                      | 45.31      | 117.00   | 15 00         |
| March .....                | 76 30           | .....   | 89 45   | 59,016        | .....     | 110,618   | 18,247,516      | 82                      | 27 00      | 106 00   | 18.00         |
| April .....                | 717 10          | 526 45  | 621 15  | 589,481       | 382,899   | 756 687   | 208,987,706     | 84                      | 229.00     | 146 00   | 28 56         |
| May .....                  | 699 20          | 738 40  | 739 00  | 579,325       | 551,777   | 919,100   | 246,445,696     | 84                      | 265.50     | 144.00   | 27 00         |
| June.....                  | 720 00          | 720 00  | 720 00  | 600,308       | 561,275   | 911,708   | 250,321,172     | 85                      | 167.75     | 125.00   | 29.50         |
| July .....                 | 714 00          | 734 00  | 712 50  | 611,572       | 542,255   | 881,544   | 246,579,180     | 84                      | 279.00     | 124 00   | 29.50         |
| August .....               | 689.40          | 694 50  | 702 50  | 531,036       | 490,970   | 839,623   | 223,908,466     | 84                      | 261.00     | 134.00   | 33 62         |
| September .....            | 719 00          | 717 00  | 720 00  | 512,674       | 480,192   | 865,621   | 221,347,314     | 85                      | 283 00     | 151 00   | 30 69         |
| October .....              | 688.50          | 368.10  | 744 00  | 479,661       | 242,920   | 941,184   | 187,883,812     | 85                      | 219.37     | 186 00   | 29 87         |
| November ..                | 667.40          | 23 20   | 668 00  | 420,704       | 13,178    | 889,041   | 147,032,062     | 85                      | 155.63     | 180.00   | 22 25         |
| December.....              | 696.30          | 270.00  | 692.25  | 535,661       | 196,095   | 966,841   | 191,448,214     | 84                      | 193 50     | 199 00   | 26.75         |
| Total .....                | 7122 10         | 4792 45 | 7229 35 | 5,563,654     | 3,461,561 | 8,929,959 | 2,099,668,038   | 83                      | 2,254.31   | 1,801.00 | 320.30        |
| Average ... last year..... | 6457 20         | 4024 45 | 7572 30 | 4,918,108     | 3,422,936 | 8,820,465 | 1,933,047,827   | .....                   | 2,374.12   | 1,709.00 | 324.27        |



No. 3.—*Summary showing the work of steam engine No. 1*

| MONTHS.         | Pumping<br>time. | Revolu-<br>tions. | Gallons<br>pumped. | Coal used in pounds. |                                  |  | Pressure in air<br>vessel. | IN POUNDS.     |                    |              |              |                 |       |  |  |  |  |  |
|-----------------|------------------|-------------------|--------------------|----------------------|----------------------------------|--|----------------------------|----------------|--------------------|--------------|--------------|-----------------|-------|--|--|--|--|--|
|                 | Hrs M            |                   |                    | For<br>Pumping       | For<br>Banking fire.<br>gallons. | For<br>to raise<br>1 000 000<br>gallons. |                            | Gas or<br>oil. | Cylin-<br>der oil. | Seal<br>oil. | Coal<br>oil. | Cott'n<br>W'sta |       |  |  |  |  |  |
| 1889            |                  |                   |                    |                      |                                  |  |                            |                |                    |              |              |                 |       |  |  |  |  |  |
| January .....   | 207.40           | 156,465           | 86 055,750         | 288,950              | 41,870                           | 3,844                                    | 82                         | 72.00          | 176.00             | 28.00        | 120.00       | 12.00           |       |  |  |  |  |  |
| February .....  | 417.00           | 352,051           | 193,628,050        | 709,520              | 32,630                           | 3,832                                    | 84                         | 159.00         | 432.00             | 75.00        | 224.00       | 32.75           |       |  |  |  |  |  |
| March .....     | 644.35           | 515,642           | 283,603,100        | 999,700              | 12,960                           | 3,570                                    | 85                         | 156.00         | 376.00             | 81.00        | 104.00       | 15.31           |       |  |  |  |  |  |
| April .....     | 63.36            | 42,885            | 23,586,750         | 76,130               | 11,020                           | 3,694                                    | 78                         | 15.00          | 48.00              | .....        | 24.00        | 12.63           |       |  |  |  |  |  |
| May .....       | .....            | .....             | .....              | .....                | .....                            | .....                                    | .....                      | .....          | .....              | .....        | .....        | .....           | ..... |  |  |  |  |  |
| June .....      | 52.20            | 34,342            | 18,888,100         | 67,180               | 7,710                            | 3,964                                    | 79                         | 18.00          | 56.00              | 8.00         | 16.00        | 12.00           |       |  |  |  |  |  |
| July .....      | 104.45           | 79,873            | 43,930,150         | 165,780              | 14,310                           | 4,099                                    | 83                         | 42.75          | 88.00              | 16.00        | 16.00        | 15.44           |       |  |  |  |  |  |
| August .....    | 215.15           | 170,550           | 93,802,500         | 338,760              | 23,860                           | 3,843                                    | 85                         | 81.00          | 168.00             | 18.25        | 16.00        | 12.56           |       |  |  |  |  |  |
| September ..... | 171.45           | 138,220           | 76,021,000         | 264,030              | 34,500                           | 3,926                                    | 85                         | 67.31          | 184.00             | 8.87         | 32.00        | 10.00           |       |  |  |  |  |  |
| October .....   | 180.10           | 146,184           | 80,401,200         | 274,670              | 39,790                           | 3,910                                    | 85                         | 83.25          | 176.00             | 26.63        | 40.00        | 12.00           |       |  |  |  |  |  |
| November .....  | 250.10           | 188,825           | 103,853,750        | 356,190              | 46,620                           | 3,878                                    | 84                         | 99.00          | 288.00             | 27.50        | 56.00        | 20.00           |       |  |  |  |  |  |
| December .....  | 208.10           | 176,738           | 96,930,900         | 326,020              | 45,060                           | 3,828                                    | 85                         | 103.50         | 240.90             | 44.37        | 80.00        | 15.44           |       |  |  |  |  |  |
| Total .....     | 2515.20          | 2,001,275         | 1,100,701,250      | 3,866,890            | 310,330                          | .....                                    | .....                      | 896.81         | 2,232.00           | 333.62       | 928.00       | 170.13          |       |  |  |  |  |  |
| Average .....   | .....            | .....             | .....              | .....                | .....                            | 3,796                                    | 83                         | .....          | .....              | .....        | .....        | .....           |       |  |  |  |  |  |
| Last year ..... | 2,271.00         | 1,507,407         | 899,073,850        | 3,267,720            | 118,230                          | .....                                    | .....                      | 322.00         | 1,102.12           | 189.12       | 808.00       | 149.81          |       |  |  |  |  |  |
| Average .....   | .....            | .....             | .....              | .....                | .....                            | 4,083                                    | .....                      | .....          | .....              | .....        | .....        | .....           |       |  |  |  |  |  |

No 4.—SCHEDULE showing the work of steam engine No 3.

| MONTHS.         | Pump-<br>ing<br>time. | Revolu-<br>tions. | Galls pumped | Coal used in pounds. |                          |                                   | Average pressure on<br>pump piston. | In pounds.     |                    |              |              | Cotton waste. |
|-----------------|-----------------------|-------------------|--------------|----------------------|--------------------------|-----------------------------------|-------------------------------------|----------------|--------------------|--------------|--------------|---------------|
|                 | Hrs. M.               |                   |              | For<br>pumping.      | For<br>banking<br>fires. | To raise<br>1 000 000<br>gallons. |                                     | Castor<br>oil. | Cylin-<br>der oil. | Seal<br>oil. | Coal<br>oil. |               |
| 1889.           |                       |                   |              |                      |                          |                                   |                                     |                |                    |              |              |               |
| January .....   | 8.00                  | 5,180             | 2,258,480    | 15,660               | 1,660                    | .....                             | 75                                  | 2.19           | 16.60              | .....        | 8.00         | 7.00          |
| February .....  | .....                 | .....             | .....        | .....                | .....                    | .....                             | .....                               | .....          | .....              | .....        | .....        | .....         |
| March .....     | .....                 | .....             | .....        | .....                | .....                    | .....                             | .....                               | .....          | .....              | .....        | .....        | .....         |
| April .....     | .....                 | .....             | .....        | .....                | .....                    | .....                             | .....                               | .....          | .....              | .....        | .....        | .....         |
| May .....       | 84.3                  | 559.19            | 24,380,684   | 126,050              | 20,410                   | 6,131                             | 75                                  | 15.75          | 80.00              | .....        | 8.00         | 12.25         |
| June .....      | 44                    | 291.66            | 12,716,376   | 68,440               | 9,000                    | 6,089                             | 75                                  | 6.75           | 40.00              | .....        | 8.00         | 18.00         |
| July .....      | .....                 | .....             | .....        | .....                | .....                    | .....                             | .....                               | .....          | .....              | .....        | .....        | .....         |
| August .....    | 38.00                 | 25,700            | 11,205,200   | 62,860               | 8,510                    | 6,369                             | 75                                  | 4.50           | 32.00              | .....        | .....        | 8.00          |
| September ..... | 94.20                 | 66,951            | 29,190,636   | 143,100              | 19,130                   | 5,557                             | 75                                  | 13.50          | 88.00              | .....        | 24.00        | .....         |
| October .....   | 81.20                 | 54,352            | 23,697,472   | 114,350              | 15,340                   | 5,472                             | 75                                  | 11.25          | 64.00              | 8.87         | 16.00        | 10.00         |
| November .....  | .....                 | .....             | .....        | .....                | .....                    | .....                             | .....                               | .....          | .....              | .....        | .....        | .....         |
| December .....  | 32.35                 | 16,508            | 7,197,488    | 37,43                | 7,230                    | 6,219                             | 75                                  | 4.80           | 48.00              | 8.87         | 24.00        | 15.50         |
| Total .....     | 382.50                | 253,776           | 110,646,336  | 567,890              | 81,280                   | .....                             | .....                               | 58.44          | 368.00             | 17.74        | 88.00        | 60.75         |
| Average .....   | .....                 | .....             | .....        | .....                | .....                    | 5,867                             | 75                                  | .....          | .....              | .....        | .....        | .....         |
| Last year ..... | 2,815.30              | 1,746,381         | 761,422,116  | 4,078,240            | 348,650                  | .....                             | .....                               | 278.00         | 1,722.62           | 230.18       | 808.00       | 179.25        |
| Average .....   | .....                 | .....             | .....        | .....                | .....                    | 5,814                             | 75                                  | .....          | .....              | .....        | .....        | .....         |

No. 5.—**SCHEDULE.** Montreal Water Works, Low Level pumping station, Gallons pumped 1889.

| MONTHS.       | By Water Power. |              |              |              | By Steam Power. |               | Total for each month. |               |                        | Percentage. |           | Average level of water. |                     |
|---------------|-----------------|--------------|--------------|--------------|-----------------|---------------|-----------------------|---------------|------------------------|-------------|-----------|-------------------------|---------------------|
|               | Wheel No. 1.    | Wheel No. 2. | Wheel No. 3. | Wheel No. 4. | Engine No. 1.   | Engine No. 3. | By water.             | By steam.     | By water and by steam. | By water.   | By steam. | At head of aqueduct.    | In front of wheels. |
|               |                 |              |              |              |                 |               |                       |               |                        |             |           |                         |                     |
| January.....  | 133,184,664     | 84,539,524   | .....        | 40,527,500   | 86,055,750      | 2,258,480     | 258,251,688           | 88,314,230    | 346,565,918            | 74,522,548  | 25.48     | 38.11                   | 36.00               |
| February ..   | 95,994,602      | .....        | .....        | 32,399,812   | 193,628,050     | .....         | 128,094,414           | 193,628,050   | 322,022,464            | 39,876,013  | 16.13     | 37.83                   | 36.00               |
| March .....   | 47,300,165      | 8,734,368    | .....        | 9,513,148    | 283,603,101     | .....         | 65,547,681            | 23,603,100    | 319,150,781            | 18,778,123  | 81.23     | 37.65                   | 36.00               |
| April .....   | 129,829,464     | 87,243,632   | 56,669,052   | 65,075,082   | 23,586,750      | .....         | 338,817,230           | 23,586,750    | 362,403,980            | 93.49       | 6.51      | 39.02                   | 37.08               |
| May .....     | 132,615,678     | 85,740,100   | 81,662,996   | 79,042,600   | .....           | 24,380,684    | 379,061,374           | 24,380,684    | 403,442,058            | 93.95       | 6.05      | 39.91                   | 37.28               |
| June .....    | 130,800,841     | 88,845,584   | 83,068,700   | 78,406,888   | 18,888,100      | 12,716,376    | 381,122,013           | 31,604,476    | 412,726,489            | 92.34       | 7.65      | 40.21                   | 37.48               |
| July.....     | 138,282,005     | 90,512,656   | 80,253,740   | 75,812,784   | 43,930,150      | .....         | 384,861,185           | 43,930,150    | 428,791,335            | 89.76       | 10.24     | 39.67                   | 37.88               |
| August .....  | 124,975,375     | 79,037,328   | 72,663,560   | 72,207,578   | 93,802,500      | 11,205,200    | 348,883,841           | 105,007,700   | 453,891,541            | 78.86       | 23.13     | 38.73                   | 36.58               |
| September..   | 118,796,448     | 75,835,496   | 71,068,416   | 74,443,406   | 76,021,000      | 29,190,636    | 340,113,766           | 105,211,636   | 445,355,402            | 76.37       | 23.62     | 37.97                   | 35.18               |
| October ..... | 120,114,063     | 70,989,828   | 35,952,160   | 80,941,824   | 80,401,200      | 23,697,472    | 307,997,875           | 101,098,672   | 412,096,517            | 74.74       | 25.26     | 37.53                   | 35.24               |
| November..    | 118,221,404     | 72,624,192   | 1,950,344    | 72,457,526   | 103,853,750     | .....         | 265,253,466           | 103,853,750   | 369,107,216            | 71.87       | 28.13     | 37.40                   | 35.50               |
| December ..   | 93,097,014      | 79,277,828   | 29,022,060   | 83,148,326   | 96,930,900      | 7,197,488     | 281,545,228           | 104,128,388   | 388,673,616            | 73.21       | 26.79     | 38.16                   | 36.13               |
| Total.....    | 1,383,211,723   | 823,380,536  | 512,311,028  | 763,976,474  | 1,100,701,250   | 110,646,336   | 3,482,879,761         | 1,211,347,586 | 4,694,227,347          | .....       | .....     | .....                   | .....               |
| Average....   | .....           | .....        | .....        | .....        | .....           | .....         | 9,542,136             | 3,318,761     | 12,860,897             | 74.19       | 25.81     | 38.52                   | 36.32               |

No. 6.—SCHEDULE showing the work of Engine No. 1 (Worthington) High Level Pumping station.

| MONTHS.        | Pump-<br>ing time. | Revolu-<br>tions. | Gallons<br>pumped. | Coal used in pound,  |                          |                                   | Valvo-<br>line. | Cotton<br>waste. |
|----------------|--------------------|-------------------|--------------------|----------------------|--------------------------|-----------------------------------|-----------------|------------------|
|                |                    |                   |                    | For<br>pump-<br>ing. | For<br>banking<br>fires. | To raise<br>1,000,000<br>gallons. |                 |                  |
|                | Hrs. M.            |                   |                    |                      |                          |                                   |                 |                  |
|                | 1889.              |                   |                    |                      |                          |                                   |                 |                  |
| January.....   | .....              | .....             | .....              | .....                | .....                    | .....                             | .....           | .....            |
| February.....  | .....              | .....             | .....              | .....                | .....                    | .....                             | .....           | .....            |
| March.....     | .....              | .....             | .....              | .....                | .....                    | .....                             | .....           | .....            |
| April.....     | .....              | .....             | .....              | .....                | .....                    | .....                             | .....           | .....            |
| May.....       | .....              | .....             | .....              | .....                | .....                    | .....                             | .....           | .....            |
| June.....      | .....              | .....             | .....              | .....                | .....                    | .....                             | .....           | .....            |
| July.....      | 34.30              | 89,453            | 1,073,436          | 5,579                | 1,010                    | 6,131                             | 13.00           | 4.00             |
| August.....    | 22 00              | 39,023            | 468,276            | 3,002                | 655                      | 7,801                             | 12.00           | 4.00             |
| September..... | .....              | .....             | .....              | .....                | .....                    | .....                             | .....           | .....            |
| October.....   | .....              | .....             | .....              | .....                | .....                    | .....                             | .....           | .....            |
| November.....  | .....              | .....             | .....              | .....                | .....                    | .....                             | .....           | .....            |
| December.....  | .....              | .....             | .....              | .....                | .....                    | .....                             | .....           | .....            |
| Total.....     | 56.30              | 128,476           | 1,541,712          | 8,581                | 1,665                    | .....                             | 25.01           | 8.00             |
| Average.....   | .....              | .....             | .....              | .....                | .....                    | 6,646                             |                 |                  |
| Last year..... | .....              | .....             | .....              | .....                | .....                    |                                   |                 |                  |

No. 7.—SCHEDULE showing the work of Engine No. 2 (Gilbert's) High Level Pumping station.

| MONTHS.         | Time of Pumping. | Revolutions. | Gallons pumped. | Pressure in air vessel. | Coal used in pounds. |                    |                            |              | Cylinder oil lbs. | Cotton waste lbs. |
|-----------------|------------------|--------------|-----------------|-------------------------|----------------------|--------------------|----------------------------|--------------|-------------------|-------------------|
|                 | Hrs. M.          |              |                 |                         | For pumping          | For banking fires. | To raise 1,000,00 gallons. | For heating. |                   |                   |
| 1889.           |                  |              |                 |                         |                      |                    |                            |              |                   |                   |
| January .....   | 82.15            | 167,904      | 8,081,745       | 110                     | 22,296               | 8,757              | 3,840                      | 5,007        | 95.00             | 25.               |
| February .....  | 75.00            | 161,758      | 7,788,809       | 110                     | 20,460               | 6,377              | 3,445                      | 6,813        | 66.75             | 30.               |
| March .....     | 75.55            | 164,581      | 7,924,739       | 110                     | 19,478               | 6,420              | 3,268                      | 6,543        | 66.50             | 30.               |
| April .....     | 75.45            | 160,240      | 7,715,716       | 110                     | 18,846               | 9,262              | 3,643                      | 1,435        | 62.75             | 30.               |
| May .....       | 105.00           | 221,214      | 10,651,675      | 110                     | 26,685               | 9,476              | 3,394                      | .....        | 84.25             | 30.               |
| June .....      | 125.30           | 269,492      | 12,976,309      | 115                     | 32,590               | 8,279              | 3,150                      | .....        | 85.50             | 30.               |
| July .....      | 103.00           | 217,481      | 10,471,927      | 118                     | 28,123               | 7,512              | 3,403                      | .....        | 90.25             | 50.               |
| August .....    | 116.15           | 255,678      | 12,311,151      | 118                     | 33,574               | 7,962              | 3,374                      | .....        | 106.50            | 30.               |
| September ..... | 117.55           | 259,288      | 12,484,976      | 120                     | 35,575               | 8,510              | 3,531                      | .....        | 122.75            | 50.               |
| October .....   | 115.45           | 241,720      | 11,602,560      | 119                     | 35,299               | 8,400              | 3,766                      | 1,017        | 100.00            | 50.               |
| November .....  | 104.00           | 218,624      | 10,493,952      | 118                     | 34,381               | 7,500              | 3,991                      | 2,428        | 85.25             | 50.               |
| December .....  | 112.30           | 257,713      | 12,370,224      | 117                     | 41,295               | 8,345              | 4,013                      | 3,670        | 101.25            | 50.               |
| Total .....     | 1,208.50         | 2,595,693    | 124,876,783     | .....                   | 348,602              | 96,800             | .....                      | 26,913       | 1,066.75          | 455.00            |
| Average .....   | .....            | .....        | .....           | 115                     | .....                | .....              | 3,567                      | .....        | .....             | .....             |

No. 8. —Schedule showing the depth of water, the rain fall and the average temperature at 9 a. m. at McTavish street Reservoir.

| MONTHS.         | Average monthly<br>depth in feet. | Rain gauges in inches. |        |                                |                | Average tempera-<br>ture at 9 a.m. |
|-----------------|-----------------------------------|------------------------|--------|--------------------------------|----------------|------------------------------------|
|                 |                                   | Rain.                  | Snow.  | Snow<br>reduced<br>to<br>rain. | Total<br>rain. |                                    |
| 1889            |                                   |                        |        |                                |                |                                    |
| January .....   | 22.76                             | 1.14                   | 35.75  | 3.99                           | 5.13           | 23.16                              |
| February.. ..   | 22.34                             | 0.30                   | 24.75  | 2.62                           | 2.92           | 12.71                              |
| March .....     | 22.62                             | 0.84                   | 13.50  | 1.44                           | 2.28           | 30.45                              |
| April .....     | 22.32                             | 2.05                   | .....  | .....                          | 2.05           | 47.57                              |
| May ... ..      | 21.74                             | 2.44                   | .....  | .....                          | 2.44           | 58.13                              |
| June .....      | 21.31                             | 4.37                   | .....  | .....                          | 4.37           | 59.93                              |
| July .....      | 18.40                             | 6.68                   | .....  | .....                          | 6.68           | 63.45                              |
| August .....    | 17.93                             | 2.10                   | .....  | .....                          | 2.10           | 65.26                              |
| September ..... | 22.19                             | 5.14                   | .....  | .....                          | 5.14           | 59.87                              |
| October .....   | 22.38                             | 3.42                   | .....  | .....                          | 3.42           | 42.97                              |
| November.....   | 22.19                             | 1.57                   | 16.00  | 1.09                           | 2.66           | 36.83                              |
| December .....  | .....                             | 4.32                   | 11.00  | 1.81                           | 6.13           | 23.97                              |
| Total.....      | .....                             | 34.37                  | 101.00 | 10.95                          | 45.32          | 43.69                              |
| Last year.....  | .....                             | 26.70                  | 103.00 | 10.45                          | 37.15          | 39.40                              |

## SCHEDULE No. 9.

Repairs to mains, hydrants and valves, during the year 1889.

| DESCRIPTION.                | 12"   | 10"   | 8"    | 6" | 4" | Hydrant valves renewed. | Hydrants replaced by non-freezing hydrants. | Hydrants replaced. | Hydrant rods broken. |
|-----------------------------|-------|-------|-------|----|----|-------------------------|---|--------------------|----------------------|
| Mains broken .....          | 5     | 1     | ..... | 6  | 12 |                         |   |                    |                      |
| Joints blown out.....       | 13    | 8     | 2     | 21 | 41 |                         |   |                    |                      |
| Stop-valves renewed.....    | 1     | 2     | 1     | 9  | 14 |                         |   |                    |                      |
| Valve Spindles renewed..... | ..... | ..... | ..... | 2  | 2  |                         |   |                    |                      |
|                             |       |       |       |    |    | 180                     | 2   | 2                  | 21                   |

Repairs &amp;c, to service.

| Leaking over drains. | Couplings leaking. | Burst in wall. | Cocks renewed. | Wooden boxes replaced by iron ones. | Pipes choked. | Old kind cocks replaced by pneumatic valve. |
|----------------------|--------------------|----------------|----------------|-------------------------------------|---------------|---|
| 25                   | 53                 | 43             | 27             | 448                                 | 63            | 60  |

Service pipes reported broken.

| Pipes frozen inside. | Pipes frozen in wall. | False reports investigated. | Leak on services from various causes undefined. |
|----------------------|-----------------------|-----------------------------|---|
| 51                   | 77                    | 20                          | 824   |

Hydrants frozen during winter commencing Dec. 1889 ending April 1890.

| January. | February. | March. | Total.                                  |
|----------|-----------|--------|---|
| 82       | 647       | 62     | Hydrants reported frozen 791 times. 267 |

New hydrants (old pattern) put in during year 1889 (new work)..... 2  
 New hydrants put in during year 1889 (5 nozzle)..... 89  
 New patent hydrants (2 nozzle) put in during year 1889 (new work). 105  
 New patent hydrants in position up to January 1890 (2 nozzle).. . . 455  
 New patent hydrants in position up to January 1890 (5 nozzle)..... 153  
 " Pneumatic " valves put in during year 1889 (new work)..... 2828  
 Pneumatic cocks put in up to January 1890 new work and repairs..10255

No. 10.—Comparative table showing the average daily consumption for each month and for each year from 1879 to 1889 in the City of Montreal.

| MONTHS.                       | 1879       | 1880       | 1881       | 1882       | 1883       | 1884       | 1885       | 1886       | 1887       | 1888       | 1889       |
|-------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| January .....                 | 8,711,520  | 8,675,067  | 9,548,641  | 8,269,612  | 10,575,363 | 9,824,502  | 10,970,751 | 12,754,651 | 11,032,374 | 2,502,857  | 11,179,545 |
| February .....                | 8,525,552  | 8,892,987  | 9,126,557  | 8,669,932  | 10,745,981 | 9,882,102  | 11,674,837 | 12,570,483 | 11,017,239 | 1,252,367  | 11,500,802 |
| March .....                   | 9,082,027  | 9,430,162  | 9,009,364  | 9,028,616  | 10,531,461 | 9,881,164  | 11,224,575 | 12,105,761 | 12,240,017 | 4,035,641  | 11,282,926 |
| April .....                   | 9,198,983  | 9,098,494  | 9,147,791  | 9,024,754  | 10,356,518 | 10,630,651 | 11,542,215 | 12,806,602 | 12,305,894 | 3,242,802  | 2,080,132  |
| May .....                     | 9,279,565  | 9,132,068  | 9,058,877  | 8,915,219  | 9,626,842  | 10,640,084 | 11,856,877 | 12,554,388 | 13,137,230 | 3,332,800  | 3,014,280  |
| June .....                    | 9,487,630  | 10,238,392 | 9,674,104  | 9,386,071  | 10,566,558 | 0,885,609  | 11,882,884 | 12,982,829 | 13,835,448 | 4,159,814  | 3,757,549  |
| July .....                    | 10,025,086 | 10,574,083 | 10,423,208 | 10,305,110 | 11,299,701 | 11,895,114 | 12,710,834 | 13,505,315 | 15,461,151 | 5,459,504  | 3,831,978  |
| August .....                  | 10,312,223 | 11,097,646 | 10,548,459 | 10,811,241 | 11,374,208 | 11,827,676 | 12,777,687 | 13,548,242 | 14,915,015 | 239,077    | 4,641,082  |
| September .....               | 9,753,752  | 10,720,280 | 10,981,133 | 10,787,854 | 11,338,376 | 11,656,141 | 11,750,260 | 13,543,109 | 13,565,962 | 13,035,784 | 4,845,800  |
| October .....                 | 9,034,211  | 10,131,764 | 10,285,657 | 10,015,944 | 11,101,760 | 11,018,725 | 12,434,970 | 12,498,404 | 12,808,967 | 13,025,200 | 3,103,437  |
| November .....                | 8,270,213  | 9,230,560  | 9,093,571  | 9,796,205  | 10,091,780 | 10,343,286 | 12,495,331 | 11,181,895 | 12,983,314 | 12,413,281 | 2,303,573  |
| December .....                | 8,169,285  | 9,046,544  | 8,350,180  | 9,727,250  | 9,331,761  | 10,301,871 | 12,263,397 | 11,477,885 | 11,390,324 | 11,717,791 | 2,537,858  |
| Daily average for each year.  | 9,177,504  | 9,691,001  | 9,606,295  | 9,561,759  | 10,552,174 | 10,687,037 | 11,970,504 | 12,642,957 | 13,034,906 | 13,420,311 | 12,860,897 |
| Increase over preceding year. | 86,373     | 514,197    | .....      | .....      | 985,415    | 134,863    | 1,283,467  | 872,453    | 411,949    | 367,021    | .....      |
| Decrease from                 | .....      | .....      | 85,601     | 39,536     | .....      | .....      | .....      | .....      | .....      | .....      | 559,413    |



No. 11.—Schedule showing the different kinds and sizes of Meters belonging to the City and to private parties.

| KINDS.        | Sizes in inches. | Property of the City. |                   |                   |        | Private Property. |                   |                   |        | Grand total. |
|---------------|------------------|-----------------------|-------------------|-------------------|--------|-------------------|-------------------|-------------------|--------|--------------|
|               |                  | In the City.          | Outside the City. | At the work shop. | Total. | In the City.      | Outside the City. | At the work shop. | Total. |              |
| Gem           | 10               |                       |                   | 2                 | 2      |                   |                   |                   |        | 2            |
| "             | 6                | 4                     | 1                 | 1                 | 6      | 4                 |                   |                   | 4      | 10           |
| "             | 4                | 20                    |                   | 4                 | 24     | 3                 |                   |                   | 3      | 27           |
| "             | 3                | 63                    |                   | 4                 | 67     | 9                 |                   | 1                 | 10     | 77           |
| "             | 2                | 29                    |                   | 4                 | 33     | 3                 |                   | 4                 | 7      | 42           |
| "             | 1 1/2            | 8                     |                   | 4                 | 12     | 4                 |                   | 1                 | 5      | 17           |
| "             | 1                |                       |                   | 7                 | 7      |                   |                   |                   |        | 7            |
| "             | 3/4              | 1                     |                   | 11                | 12     |                   |                   | 2                 | 2      | 14           |
| "             | 1/2              |                       |                   | 74                | 74     |                   |                   | 2                 | 2      | 76           |
| Union         | 1 1/2            |                       |                   | 1                 | 1      |                   |                   |                   |        | 1            |
| "             | 2                |                       |                   | 2                 | 2      | 1                 |                   |                   | 1      | 3            |
| "             | 1                | 23                    |                   | 1                 | 24     | 1                 |                   |                   | 1      | 25           |
| "             | 3/4              | 66                    |                   |                   | 66     | 3                 |                   |                   | 3      | 69           |
| Rotary Union. | 4                |                       |                   | 2                 | 2      |                   |                   |                   |        | 2            |
| "             | 3                |                       |                   | 1                 | 1      |                   |                   | 1                 | 1      | 2            |
| "             | 2                |                       |                   | 2                 | 2      |                   |                   |                   |        | 2            |
| "             | 1 1/2            | 2                     |                   | 3                 | 5      |                   |                   |                   |        | 5            |
| "             | 1                |                       |                   | 3                 | 3      |                   |                   |                   |        | 3            |
| "             | 3/4              |                       |                   | 14                | 14     |                   |                   |                   |        | 14           |
| "             | 1/2              |                       |                   | 3                 | 3      |                   |                   |                   |        | 3            |
| Crown         | 6                | 1                     |                   |                   | 1      | 1                 | 1                 |                   | 2      | 3            |
| "             | 4                | 8                     | 1                 |                   | 9      | 2                 |                   |                   | 2      | 11           |
| "             | 3                | 5                     | 1                 |                   | 6      | 2                 |                   |                   | 2      | 8            |
| "             | 2                | 12                    | 3                 |                   | 15     | 3                 |                   |                   | 3      | 18           |
| "             | 1 1/2            | 14                    |                   | 1                 | 15     | 1                 |                   |                   | 1      | 16           |
| "             | 1                | 35                    | 1                 | 3                 | 39     |                   |                   |                   |        | 39           |
| "             | 3/4              | 39                    |                   | 9                 | 48     | 1                 |                   |                   | 1      | 49           |
| "             | 1/2              | 76                    | 1                 | 11                | 88     | 2                 | 4                 |                   | 6      | 94           |
| "             | 3/8              |                       |                   | 3                 | 3      |                   |                   |                   |        | 3            |
| Empire        | 2                |                       |                   |                   |        |                   |                   |                   |        |              |
| "             | 1                | 15                    |                   | 1                 | 16     |                   |                   |                   |        | 16           |
| "             | 3/4              | 3                     |                   |                   | 3      |                   |                   |                   |        | 3            |
| "             | 1/2              | 44                    |                   | 7                 | 50     |                   |                   |                   |        | 50           |
| Worthington   | 4                |                       |                   |                   |        | 1                 |                   |                   | 1      | 1            |
| "             | 3                | 1                     |                   | 1                 | 2      |                   |                   |                   |        | 2            |
| "             | 2                | 11                    |                   |                   | 11     | 5                 |                   |                   | 5      | 16           |
| "             | 1 1/2            | 14                    |                   |                   | 14     | 1                 |                   |                   | 1      | 15           |
| "             | 1                | 44                    | 1                 | 3                 | 48     |                   |                   |                   |        | 48           |
| "             | 3/4              | 39                    |                   | 9                 | 48     | 5                 |                   | 3                 | 8      | 56           |
| Hersey        | 1                |                       |                   |                   |        |                   |                   |                   |        |              |
| Continental   | 2                |                       |                   | 4                 | 4      |                   |                   |                   |        | 4            |
| Siemens       | 1                |                       |                   | 1                 | 1      |                   |                   |                   |        | 1            |
| "             | 1                |                       |                   | 1                 | 1      |                   |                   |                   |        | 1            |
| Endine        | 1                |                       |                   | 1                 | 1      |                   |                   |                   |        | 1            |
| Lewis         | 1                |                       |                   | 1                 | 1      |                   |                   |                   |        | 1            |
| Equitable     | 1                |                       |                   |                   |        | 1                 |                   |                   | 1      | 1            |
| "             | 1                |                       |                   |                   |        |                   |                   |                   |        |              |
| Sportous      | 1                |                       |                   | 1                 | 1      |                   |                   |                   |        | 1            |
| Maxime        | 1                |                       |                   |                   |        |                   |                   | 1                 | 1      | 1            |
| Total         |                  | 601                   | 9                 | 201               | 811    | 55                | 5                 | 15                | 75     | 886          |

No. 2—Schedule showing the work of the Wheels No. 2 (Breast) and Nos. 3 &amp; 4 (Turbines).

| MONTHS.         | Time of Pumping. |         |         | Revolutions.  |           |           | Gallons pumped. | Pressure in air Vessel. | In pounds.  |          |               |
|-----------------|------------------|---------|---------|---------------|-----------|-----------|-----------------|-------------------------|-------------|----------|---------------|
|                 | Breast Wheel.    | Turbine | Turbine | Breast Wheel. | Turbine.  | Turbine.  |                 |                         | Castor oil. | Coal oil | Cotton waste. |
| 1889.           | No. 2.           | No. 3.  | No. 4.  | No. 2.        | No. 3     | No. 4.    |                 |                         |             |          |               |
|                 | Hrs. M.          | Hrs. M. | Hrs. M. |               |           |           |                 |                         |             |          |               |
| January .....   | 703.30           | .....   | 450 20  | 571,213       | .....     | 471,250   | 125,067,024     | 79                      | 128.25      | 189.00   | 31.50         |
| February .....  | .....            | .....   | 339 10  | .....         | .....     | 376,742   | 32,399,812      | 80                      | 45.31       | 117.00   | 15.00         |
| March .....     | 76.30            | .....   | 89 45   | 59,016        | .....     | 110,618   | 18,247,516      | 82                      | 27.00       | 106.00   | 18.00         |
| April .....     | 717.10           | 526 43  | 621.15  | 589,484       | 382,899   | 756,687   | 208,987,566     | 84                      | 229.00      | 146.00   | 26.56         |
| May .....       | 699.20           | 738.40  | 739 00  | 579,325       | 551,777   | 919,100   | 246,445,696     | 84                      | 265.50      | 144.00   | 27.00         |
| June .....      | 720 00           | 720 00  | 720 00  | 600,308       | 561,275   | 911,708   | 250,321,172     | 85                      | 167.75      | 125.00   | 29.56         |
| July .....      | 744 00           | 734 00  | 742 50  | 611,572       | 542,255   | 881,544   | 246,579,180     | 84                      | 279.00      | 124.00   | 29.50         |
| August .....    | 689 40           | 694 50  | 702 50  | 534,036       | 490,970   | 839,623   | 223,908,466     | 84                      | 261.00      | 134.00   | 33.62         |
| September ..... | 719 00           | 717.00  | 720.00  | 542,674       | 480,192   | 865,621   | 221,347,318     | 85                      | 283.00      | 151.00   | 30.69         |
| October .....   | 688.50           | 368 10  | 744 00  | 479,661       | 242,920   | 941,184   | 187,883,812     | 85                      | 219.37      | 186.00   | 29.87         |
| November .....  | 667.40           | 23.20   | 668 00  | 490,704       | 13,178    | 889,041   | 147,032,062     | 85                      | 155.63      | 180.00   | 22.25         |
| December .....  | 696.30           | 270.00  | 692.25  | 535,661       | 196,095   | 966,841   | 191,448,214     | 84                      | 193.50      | 199.00   | 26.75         |
| Total .....     | 7122 10          | 4792.43 | 7229.35 | 5,563,654     | 3,461,561 | 8,929,959 | 2,099,668,038   | 83                      | 2,254.31    | 1,801.00 | 320.30        |
| Average .....   | 6457.20          | 4924.45 | 7572.30 | 4,918,198     | 3,422,936 | 8,820,465 | 1,933,047,827   | .....                   | 2,374.12    | 1,709.00 | 324.27        |

No. 3.—SCHEDULE showing the work of steam engine No. 1

| MONTHS.         | Pumping time. |   | Revolutions. | Gallons pumped. | Coal used in pounds. |                            | Pressure in air vessel. | IN POUNDS.  |               |           |           |              |
|-----------------|---------------|---|--------------|-----------------|----------------------|----------------------------|-------------------------|-------------|---------------|-----------|-----------|--------------|
|                 | Hrs           | M |              |                 | For Pumping          | For Banking fire. gallons. |                         | Castor oil. | Cylinder oil. | Seal oil. | Coal oil. | Cott'n Waste |
| 1889            |               |   |              |                 |                      |                            |                         |             |               |           |           |              |
| January .....   | 207.40        |   | 155,465      | 86,055,750      | 288,930              | 41,870                     | 3,844                   | 72.00       | 176.00        | 28.00     | 120.00    | 12.00        |
| February .....  | 417.00        |   | 352,051      | 193,628,050     | 709,520              | 32,630                     | 3,832                   | 159.00      | 432.00        | 75.00     | 224.00    | 32.75        |
| March .....     | 644.35        |   | 515,642      | 283,603,100     | 999,700              | 12,060                     | 3,570                   | 156.00      | 376.00        | 81.00     | 104.00    | 15.31        |
| April .....     | 63.30         |   | 42,885       | 23,585,750      | 76,130               | 11,020                     | 3,694                   | 15.00       | 48.00         | .....     | 24.00     | 12.63        |
| May .....       | .....         |   | .....        | .....           | .....                | .....                      | .....                   | .....       | .....         | .....     | .....     | .....        |
| June .....      | 52.20         |   | 34,342       | 18,888,100      | 67,180               | 7,710                      | 3,964                   | 18.00       | 56.00         | 8.00      | 16.00     | 12.00        |
| July .....      | 104.45        |   | 79,873       | 43,930,150      | 165,780              | 14,310                     | 4,099                   | 42.75       | 88.00         | 16.00     | 16.00     | 15.44        |
| August .....    | 215.15        |   | 170,550      | 93,802,500      | 338,760              | 23,860                     | 3,843                   | 81.00       | 168.00        | 18.25     | 16.00     | 12.56        |
| September ..... | 171.45        |   | 138,220      | 76,021,000      | 264,030              | 34,500                     | 3,926                   | 67.31       | 184.00        | 8.87      | 32.00     | 10.00        |
| October .....   | 180.10        |   | 146,184      | 80,401,200      | 274,620              | 39,790                     | 3,910                   | 83.25       | 176.00        | 26.63     | 40.00     | 12.00        |
| November .....  | 250.10        |   | 188,825      | 103,853,750     | 356,190              | 46,620                     | 3,876                   | 99.00       | 288.00        | 27.50     | 56.00     | 20.00        |
| December .....  | 208.10        |   | 176,238      | 96,930,900      | 328,020              | 45,060                     | 3,828                   | 103.50      | 240.90        | 44.37     | 80.00     | 15.44        |
| Total .....     | 2515.20       |   | 2,001,275    | 1,100,701,250   | 3,866,890            | 310,330                    | .....                   | 896.81      | 2,232.00      | 333.61    | 928.00    | 170.13       |
| Average .....   | .....         |   | .....        | .....           | .....                | .....                      | 3,796                   | .....       | .....         | .....     | .....     | .....        |
| Last year ..... | 2,271.00      |   | 1,507,407    | 829,073,850     | 3,267,720            | 118,230                    | .....                   | 322.00      | 1,102.12      | 189.12    | 808.00    | 149.81       |
| Average .....   | .....         |   | .....        | .....           | .....                | .....                      | 4,083                   | .....       | .....         | .....     | .....     | .....        |

No 4.—SCHEDULE showing the work of steam engine No 3.

| MONTHS.         | Pump-<br>ing<br>time. | Revolu-<br>tions. | Galls pumped | Coal used in pounds. |                          |                                   | Average pressure on<br>pump piston. | IN POUNDS. |          |       |           |        | Castor<br>oil. | Cylin-<br>der oil. | Seal<br>oil. | Coal<br>oil. | (Cotton waste. |
|-----------------|-----------------------|-------------------|--------------|----------------------|--------------------------|-----------------------------------|-------------------------------------|------------|----------|-------|-----------|--------|----------------|--------------------|--------------|--------------|----------------|
|                 | Hrs. M.               |                   |              | For<br>pumping.      | For<br>banking<br>fires. | To raise<br>1 000 000<br>gallons. |                                     | 75         | 2.19     | 16.60 | 8.00      | 7.00   |                |                    |              |              |                |
|                 |                       |                   |              |                      |                          |                                   |                                     |            |          |       |           |        |                |                    |              |              |                |
| 1889.           |                       |                   |              |                      |                          |                                   |                                     |            |          |       |           |        |                |                    |              |              |                |
| January .....   | 8.00                  | 5,180             | 2,258,480    | 15,660               | 1,660                    | .....                             | 75                                  | 2.19       | 16.60    | ..... | 8.00      | 7.00   |                |                    |              |              |                |
| February .....  | .....                 | .....             | .....        | .....                | .....                    | .....                             | .....                               | .....      | .....    | ..... | .....     | .....  |                |                    |              |              |                |
| March .....     | .....                 | .....             | .....        | .....                | .....                    | .....                             | .....                               | .....      | .....    | ..... | .....     | .....  |                |                    |              |              |                |
| April .....     | .....                 | .....             | .....        | .....                | .....                    | .....                             | .....                               | .....      | .....    | ..... | .....     | .....  |                |                    |              |              |                |
| May .....       | 84.3                  | 559,19            | 24,380,684   | 126,050              | 20,410                   | 6,131                             | 75                                  | 15.75      | 80.00    | ..... | 8.00      | 12.25  |                |                    |              |              |                |
| June .....      | 44                    | 291,66            | 12,716,376   | 68,440               | 9,000                    | 6,089                             | 75                                  | 6.75       | 40.00    | ..... | 8.00      | 18.00  |                |                    |              |              |                |
| July .....      | .....                 | .....             | .....        | .....                | .....                    | .....                             | .....                               | .....      | .....    | ..... | .....     | .....  |                |                    |              |              |                |
| August .....    | 38.00                 | 25,700            | 11,205,200   | 62,860               | 8,510                    | 6,369                             | 75                                  | 4.50       | 32.00    | ..... | .....     | 8.00   |                |                    |              |              |                |
| September ..... | 94.20                 | 66,951            | 29,190,636   | 143,100              | 19,130                   | 5,557                             | 75                                  | 13.50      | 88.00    | ..... | 24.00     | .....  |                |                    |              |              |                |
| October .....   | 81.20                 | 54,352            | 23,697,472   | 114,350              | 15,340                   | 5,472                             | 75                                  | 11.25      | 64.00    | 8.87  | 16.00     | 10.00  |                |                    |              |              |                |
| November .....  | .....                 | .....             | .....        | .....                | .....                    | .....                             | .....                               | .....      | .....    | ..... | .....     | .....  |                |                    |              |              |                |
| December .....  | 32.35                 | 16,508            | 7,197,488    | 37,43                | 7,230                    | 6,219                             | 75                                  | 4.80       | 48.00    | 8.87  | 24.00     | 15.50  |                |                    |              |              |                |
| Total .....     | 382.50                | 253,776           | 110,646,336  | 567,890              | 81,280                   | .....                             | .....                               | 58.44      | 368.00   | 17.74 | 88.00     | 60.75  |                |                    |              |              |                |
| Average .....   | .....                 | .....             | .....        | .....                | .....                    | 5,867                             | 75                                  | .....      | .....    | ..... | .....     | .....  |                |                    |              |              |                |
| Last year ..... | 2,815.30              | 1,746,381         | 761,422,116  | 4,078,240            | 348,650                  | .....                             | .....                               | 278.00     | 1,722.62 | 230   | 188.08.00 | 179.25 |                |                    |              |              |                |
| Average .....   | .....                 | .....             | .....        | .....                | .....                    | 5,814                             | 75                                  | .....      | .....    | ..... | .....     | .....  |                |                    |              |              |                |

No. 5.—Schedule. Montreal Water Works, Low Level pumping station, Gallons pumped 1889.

| Month.         | By Water Power. |              |              |              | By Steam Power. |               | Total for each month. |               |                        | Percentage. |           | Average level of water. |
|----------------|-----------------|--------------|--------------|--------------|-----------------|---------------|-----------------------|---------------|------------------------|-------------|-----------|-------------------------|
|                | Wheel No. 1.    | Wheel No. 2. | Wheel No. 3. | Wheel No. 4. | Engine No. 1.   | Engine No. 3. | By water.             | By steam.     | By water and by steam. | By water.   | By steam. |                         |
|                |                 |              |              |              |                 |               |                       |               |                        |             |           |                         |
| January.....   | 133,184,664     | 84,539,524   | .....        | 40,527,500   | 86,055,751      | 2,258,480     | 258,251,688           | 88,314,230    | 346,565,918            | 74.52       | 25.48     | 38.1136 00              |
| February.....  | 95,991,602      | .....        | .....        | 52,399,812   | 193,628,050     | .....         | 128,944,414           | 193,628,050   | 322,022,464            | 39.87       | 60.13     | 37.8336 00              |
| March.....     | 47,300,165      | 8,731,368    | .....        | 9,513,148    | 283,603,101     | .....         | 65,547,681            | 213,603,100   | 319,150,781            | 18.77       | 81.23     | 37.6536 00              |
| April.....     | 129,829,464     | 87,243,632   | 56,669,052   | 65,075,082   | 23,586,750      | .....         | 388,817,230           | 23,586,750    | 362,403,980            | 93.49       | 6.51      | 39.0237 08              |
| May.....       | 132,615,678     | 85,740,100   | 81,662,996   | 79,042,600   | .....           | 24,380,684    | 379,061,374           | 24,380,684    | 403,442,058            | 93.95       | 6.05      | 39.9137 28              |
| June.....      | 130,800,841     | 88,845,584   | 83,068,700   | 78,406,888   | 18,888,100      | 12,716,376    | 381,122,013           | 31,604,476    | 412,726,489            | 92.34       | 7.63      | 40.2137 48              |
| July.....      | 138,282,005     | 90,512,656   | 80,253,740   | 75,812,784   | 43,930,150      | .....         | 384,861,185           | 43,930,150    | 428,791,335            | 99.76       | 10.24     | 39.6737 88              |
| August.....    | 124,975,375     | 79,037,328   | 72,663,560   | 72,207,578   | 93,802,500      | 11,205,200    | 348,883,841           | 105,007,700   | 453,891,541            | 75.86       | 23.13     | 38.7336 58              |
| September..... | 118,796,448     | 75,835,496   | 71,068,416   | 74,443,406   | 76,021,000      | 29,190,616    | 340,113,766           | 105,211,636   | 445,355,402            | 76.37       | 23.63     | 37.9735 18              |
| October.....   | 120,114,063     | 70,989,828   | 35,952,160   | 80,941,824   | 80,401,200      | 23,697,472    | 307,997,875           | 104,098,672   | 412,096,547            | 74.74       | 25.26     | 37.5335 24              |
| November.....  | 118,921,404     | 72,624,192   | 1,950,344    | 79,457,526   | 103,853,750     | .....         | 265,253,466           | 103,853,750   | 369,107,216            | 71.87       | 28.13     | 37.4035 50              |
| December.....  | 93,097,014      | 79,277,828   | 29,022,060   | 83,146,326   | 96,930,900      | 7,197,488     | 281,545,228           | 104,128,388   | 388,673,616            | 73.21       | 26.79     | 34.1636 13              |
| Total.....     | 1,383,211,723   | 823,380,536  | 12,311,028   | 763,976,474  | 1,100,701,250   | 110,646,336   | 1,879,761             | 1,211,347,586 | 4,694,227,147          | .....       | .....     | .....                   |
| Average.....   | .....           | .....        | .....        | .....        | .....           | .....         | 9,542,136             | 3,318,761     | 12,860,897             | 74.19       | 25.81     | 38.5235 32              |


No. 6, Mainman showing the work of Engine No. 1 (Worthington) High Level Pumping station.

| MONTH.          | Pump-<br>ing time | Revolu-<br>tions. | Gallons<br>pumped | Coal used in pound,  |                          |                                   | Valve-Cotton<br>line. |       | IN POUNDS. |
|-----------------|-------------------|-------------------|-------------------|----------------------|--------------------------|-----------------------------------|-----------------------|-------|------------|
|                 |                   |                   |                   | For<br>pump-<br>ing. | For<br>banking<br>fires. | To raise<br>1,000,000<br>gallons. |                       |       |            |
|                 |                   |                   |                   |                      |                          |                                   |                       |       |            |
| 1889.           |                   |                   |                   |                      |                          |                                   |                       |       |            |
| January .....   | .....             | .....             | .....             | .....                | .....                    | .....                             | .....                 | ..... | .....      |
| February .....  | .....             | .....             | .....             | .....                | .....                    | .....                             | .....                 | ..... | .....      |
| March .....     | .....             | .....             | .....             | .....                | .....                    | .....                             | .....                 | ..... | .....      |
| April .....     | .....             | .....             | .....             | .....                | .....                    | .....                             | .....                 | ..... | .....      |
| May .....       | .....             | .....             | .....             | .....                | .....                    | .....                             | .....                 | ..... | .....      |
| June .....      | .....             | .....             | .....             | .....                | .....                    | .....                             | .....                 | ..... | .....      |
| July .....      | 34.30             | 89,453            | 1,073,436         | 5,579                | 1,010                    | 6,131                             | 13.00                 | 4.00  | .....      |
| August .....    | 22.00             | 39,023            | 408,276           | 3,002                | 655                      | 7,801                             | 12.00                 | 4.00  | .....      |
| September ..... | .....             | .....             | .....             | .....                | .....                    | .....                             | .....                 | ..... | .....      |
| October .....   | .....             | .....             | .....             | .....                | .....                    | .....                             | .....                 | ..... | .....      |
| November .....  | .....             | .....             | .....             | .....                | .....                    | .....                             | .....                 | ..... | .....      |
| December .....  | .....             | .....             | .....             | .....                | .....                    | .....                             | .....                 | ..... | .....      |
| Total .....     | 56.30             | 128,476           | 1,541,712         | 8,581                | 1,665                    | .....                             | 25.00                 | 8.00  | .....      |
| Average .....   | .....             | .....             | .....             | .....                | .....                    | 6,646                             | .....                 | ..... | .....      |
| Last year ..... | .....             | .....             | .....             | .....                | .....                    | .....                             | .....                 | ..... | .....      |

No. 7.—SCHEDULE showing the work of Engine No. 2 (Gilbert's) High Level Pumping station.

| MONTHS.       | Time of Pumping. | Revolu-<br>tions. | Gallons<br>pumped. | Pressure in air<br>vessel. | Coal used in pounds. |                          |                                  |                 | Cylinder<br>oil lbs. | Cotton<br>waste<br>lbs. |
|---------------|------------------|-------------------|--------------------|----------------------------|----------------------|--------------------------|----------------------------------|-----------------|----------------------|-------------------------|
|               | Hrs. M.          |                   |                    |                            | For<br>pumping       | For<br>banking<br>fires. | To raise<br>1,000,00<br>gallons. | For<br>heating. |                      |                         |
| 1889.         | 82.15            | 167,904           | 8,084,745          | 110                        | 22,296               | 8,757                    | 3,840                            | 5,007           | 95.00                | 25.                     |
|               | 75.00            | 161,758           | 7,788,809          | 110                        | 20,460               | 6,377                    | 3,445                            | 6,813           | 66.75                | 30.                     |
|               | 75.55            | 164,581           | 7,924,739          | 110                        | 19,478               | 6,420                    | 3,268                            | 6,543           | 66.50                | 30.                     |
|               | 75.45            | 160,240           | 7,715,716          | 110                        | 18,846               | 9,262                    | 3,643                            | 1,435           | 62.75                | 30.                     |
|               | 105.00           | 221,214           | 10,651,675         | 110                        | 26,685               | 9,476                    | 3,394                            | .....           | 84.25                | 30.                     |
|               | 125.30           | 269,492           | 12,976,309         | 115                        | 32,590               | 8,279                    | 3,150                            | .....           | 85.50                | 30.                     |
|               | 103.00           | 217,481           | 10,471,927         | 118                        | 28,123               | 7,512                    | 3,403                            | .....           | 90.25                | 50.                     |
|               | 116.15           | 255,678           | 12,311,151         | 118                        | 33,574               | 7,962                    | 3,374                            | .....           | 106.50               | 30.                     |
|               | 117.55           | 259,288           | 12,484,976         | 120                        | 35,575               | 8,510                    | 3,531                            | .....           | 122.75               | 50.                     |
|               | 115.45           | 241,720           | 11,602,560         | 119                        | 35,299               | 8,400                    | 3,766                            | 1,017           | 100.00               | 50.                     |
|               | 104.00           | 218,624           | 10,493,952         | 118                        | 34,381               | 7,500                    | 3,991                            | 2,428           | 85.25                | 50.                     |
|               | 112.30           | 257,713           | 12,370,224         | 117                        | 41,295               | 8,345                    | 4,013                            | 3,670           | 101.25               | 50.                     |
| Total .....   | 1,208.50         | 2,595,693         | 124,876,783        | .....                      | 348,602              | 96,800                   | .....                            | 26,913          | 1,066.75             | 455.00                  |
| Average ..... | .....            | .....             | .....              | 115                        | .....                | .....                    | 3,567                            | .....           | .....                | .....                   |

**Schedule showing the Pipes, &c.—Continued.**

| NAMES OF  QUARTERS. | Length in feet of cast iron pipes. |     |     |     |     |     |    |    |    |       | No. of Valves. |     |     |     |     |     |    |    |    |       | Wrought Iron Pipes. | Hydrants. | Length of Lead Pipes in feet. | Houses Supplied. | Brass Cocks. | Air Cocks. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |
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|  | Total                              |     |     |     |     |     |    |    |    |       | Total          |     |     |     |     |     |    |    |    |       |                     |           |                               |                  |              |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |
|  | 30"                                | 24" | 20" | 16" | 12" | 10" | 8" | 6" | 4" | Total | 30"            | 24" | 20" | 10" | 12" | 10" | 8" | 6" | 4" | Total |                     |           |                               |                  |              |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |
| <b>St. Louis Ward-Cont.</b>  |                                    |     |     |     |     |     |    |    |    |       |                |     |     |     |     |     |    |    |    |       |                     |           |                               |                  |              |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |
| Brought forward.   |                                    |     |     |     |     |     |    |    |    |       |                |     |     |     |     |     |    |    |    |       |                     |           |                               |                  |              |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | </ |





No. 10.—Comparative table showing the average daily consumption for each month and for each year from 1879 to 1889 in the City of Montreal.

| MONTHS.                       | 1879       | 1880       | 1881       | 1882       | 1883       | 1884       | 1885       | 1886       | 1887       | 1888       | 1889       |
|-------------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| January .....                 | 8,711,520  | 8,675,067  | 9,548,641  | 8,269,612  | 10,575,363 | 9,824,502  | 10,970,751 | 12,751,651 | 11,932,374 | 12,562,557 | 11,179,545 |
| February.....                 | 8,825,552  | 8,892,987  | 9,126,557  | 8,669,932  | 10,745,981 | 9,882,105  | 11,674,835 | 12,570,484 | 11,917,259 | 13,259,355 | 11,500,802 |
| March .....                   | 9,082,027  | 9,430,162  | 9,009,361  | 9,028,616  | 10,531,461 | 9,881,461  | 11,224,575 | 12,195,561 | 12,249,017 | 14,035,645 | 11,262,928 |
| April .....                   | 9,198,983  | 9,098,494  | 9,147,791  | 9,024,754  | 10,356,518 | 10,630,655 | 11,542,215 | 12,806,662 | 12,305,894 | 13,262,805 | 12,080,132 |
| May .....                     | 9,279,565  | 9,132,068  | 9,058,872  | 8,915,219  | 9,626,842  | 10,640,086 | 11,856,877 | 12,554,388 | 13,137,236 | 13,332,800 | 13,014,259 |
| June .....                    | 9,487,630  | 10,238,392 | 9,674,104  | 9,326,071  | 10,566,558 | 10,885,667 | 11,882,888 | 12,982,829 | 13,835,448 | 14,159,814 | 13,757,549 |
| July.....                     | 10,025,080 | 10,574,083 | 10,423,208 | 10,305,110 | 11,299,205 | 11,895,114 | 12,716,836 | 13,595,315 | 15,463,159 | 15,459,565 | 13,831,978 |
| August.....                   | 10,312,223 | 11,097,648 | 10,548,459 | 10,811,241 | 11,374,208 | 11,827,676 | 12,777,687 | 13,548,242 | 14,915,013 | 14,239,075 | 14,641,662 |
| September.....                | 9,753,752  | 10,720,280 | 10,981,133 | 10,787,854 | 11,638,378 | 11,656,141 | 11,750,261 | 13,543,309 | 13,565,962 | 13,635,784 | 14,845,800 |
| October.....                  | 9,034,211  | 10,131,761 | 10,285,655 | 10,015,944 | 11,101,760 | 11,048,723 | 12,434,970 | 12,498,404 | 12,868,967 | 13,025,260 | 13,593,437 |
| November .....                | 8,270,213  | 9,230,560  | 9,093,571  | 9,796,205  | 10,091,780 | 10,343,286 | 12,495,335 | 11,181,895 | 12,983,318 | 12,413,281 | 12,303,573 |
| December .....                | 8,169,285  | 9,046,544  | 8,350,180  | 9,727,250  | 9,331,761  | 10,301,871 | 12,283,395 | 11,477,885 | 11,390,324 | 11,717,790 | 12,537,858 |
| Daily average for each year.  | 9,177,504  | 9,691,901  | 9,606,295  | 9,566,759  | 10,552,174 | 10,687,037 | 11,970,504 | 12,642,957 | 13,054,906 | 13,420,310 | 12,860,897 |
| Increase over preceding year. | 86,373     | 514,397    | .....      | .....      | 985,415    | 134,863    | 1,283,467  | 672,453    | 411,949    | 267,021    | 559,413    |
| Decrease from                 | .....      | .....      | 85,606     | 39,536     | .....      | .....      | .....      | .....      | .....      | .....      | .....      |

No. 11.—Schedule showing the different kinds and sizes of Meters belonging to the City and to private parties.

| KINDS.            | Sizes in inches. | Property of the City. |                   |                   |            | Private Property. |                   |                   |           | Grand total. |
|-------------------|------------------|-----------------------|-------------------|-------------------|------------|-------------------|-------------------|-------------------|-----------|--------------|
|                   |                  | In the City.          | Outside the City. | At the work shop. | Total.     | In the City.      | Outside the City. | At the work shop. | Total.    |              |
| Gem.....          | 10               | .....                 | .....             | 2                 | 2          | .....             | .....             | .....             | .....     | 2            |
| "                 | 6                | 4                     | 1                 | 1                 | 6          | 4                 | .....             | .....             | 4         | 10           |
| "                 | 4                | 20                    | .....             | 4                 | 24         | 3                 | .....             | .....             | 3         | 27           |
| "                 | 3                | 63                    | .....             | 4                 | 67         | 9                 | .....             | 1                 | 10        | 77           |
| "                 | 2                | 29                    | .....             | 4                 | 33         | 5                 | .....             | 4                 | 9         | 42           |
| "                 | 1 1/2            | 8                     | .....             | 4                 | 12         | 4                 | .....             | 1                 | 5         | 17           |
| "                 | 1                | .....                 | .....             | 7                 | 7          | .....             | .....             | .....             | .....     | 7            |
| "                 | 3/4              | 1                     | .....             | 11                | 12         | .....             | .....             | 2                 | 2         | 14           |
| "                 | 1/2              | .....                 | .....             | 74                | 74         | .....             | .....             | 2                 | 2         | 76           |
| Union.....        | 4                | .....                 | .....             | 1                 | 1          | .....             | .....             | .....             | .....     | 1            |
| "                 | 2                | .....                 | .....             | 2                 | 2          | 1                 | .....             | .....             | 1         | 3            |
| "                 | 1                | 23                    | .....             | 1                 | 24         | 1                 | .....             | .....             | 1         | 25           |
| "                 | 3/4              | 66                    | .....             | .....             | 66         | 3                 | .....             | .....             | 3         | 69           |
| Rotary Union..... | 4                | .....                 | .....             | 2                 | 2          | .....             | .....             | .....             | .....     | 2            |
| "                 | 3                | .....                 | .....             | 1                 | 1          | .....             | .....             | 1                 | 1         | 2            |
| "                 | 2                | .....                 | .....             | 2                 | 2          | .....             | .....             | .....             | .....     | 2            |
| "                 | 1 1/2            | 2                     | .....             | 3                 | 5          | .....             | .....             | .....             | .....     | 5            |
| "                 | 1                | .....                 | .....             | 3                 | 3          | .....             | .....             | .....             | .....     | 3            |
| "                 | 3/4              | .....                 | .....             | 14                | 14         | .....             | .....             | .....             | .....     | 14           |
| "                 | 1/2              | .....                 | .....             | 3                 | 3          | .....             | .....             | .....             | .....     | 3            |
| Crown.....        | 6                | 1                     | .....             | .....             | 1          | 1                 | 1                 | .....             | 2         | 3            |
| "                 | 4                | 8                     | 1                 | .....             | 9          | 2                 | .....             | .....             | 2         | 11           |
| "                 | 3                | 5                     | 1                 | .....             | 6          | 2                 | .....             | .....             | 2         | 8            |
| "                 | 2                | 12                    | 3                 | .....             | 15         | 3                 | .....             | .....             | 3         | 18           |
| "                 | 1 1/2            | 14                    | .....             | 1                 | 15         | 1                 | .....             | .....             | 1         | 16           |
| "                 | 1                | 35                    | 1                 | 3                 | 39         | .....             | .....             | .....             | .....     | 39           |
| "                 | 3/4              | 39                    | .....             | 9                 | 48         | 1                 | .....             | .....             | 1         | 49           |
| "                 | 1/2              | 76                    | 1                 | 11                | 88         | 2                 | 4                 | .....             | 6         | 94           |
| "                 | 3/8              | .....                 | .....             | 3                 | 3          | .....             | .....             | .....             | .....     | 3            |
| Empire.....       | 2                | 2                     | .....             | .....             | 2          | .....             | .....             | .....             | .....     | 2            |
| "                 | 1                | 15                    | .....             | 1                 | 16         | .....             | .....             | .....             | .....     | 16           |
| "                 | 3/4              | 3                     | .....             | .....             | 3          | .....             | .....             | .....             | .....     | 3            |
| "                 | 1/2              | 43                    | .....             | 7                 | 50         | .....             | .....             | .....             | .....     | 50           |
| Worthington.....  | 4                | .....                 | .....             | .....             | .....      | 1                 | .....             | .....             | 1         | 1            |
| "                 | 3                | 1                     | .....             | 1                 | 2          | .....             | .....             | .....             | .....     | 2            |
| "                 | 2                | 11                    | .....             | .....             | 11         | 5                 | .....             | .....             | 5         | 16           |
| "                 | 1 1/2            | 14                    | .....             | .....             | 14         | 1                 | .....             | .....             | 1         | 15           |
| "                 | 1                | 44                    | 1                 | 3                 | 48         | .....             | .....             | .....             | .....     | 48           |
| "                 | 3/4              | 59                    | .....             | 9                 | 68         | 5                 | .....             | 3                 | 8         | 76           |
| Hersey.....       | 1                | 1                     | .....             | .....             | 1          | .....             | .....             | .....             | .....     | 1            |
| Continental.....  | 2                | 2                     | .....             | 4                 | 6          | .....             | .....             | .....             | .....     | 6            |
| Siemens.....      | 2                | .....                 | .....             | 1                 | 1          | .....             | .....             | .....             | .....     | 1            |
| "                 | 1                | .....                 | .....             | 1                 | 1          | .....             | .....             | .....             | .....     | 1            |
| Undine.....       | 1                | .....                 | .....             | 1                 | 1          | .....             | .....             | .....             | .....     | 1            |
| Lewis.....        | 1                | .....                 | .....             | 1                 | 1          | .....             | .....             | .....             | .....     | 1            |
| Equitable.....    | 1                | .....                 | .....             | .....             | .....      | 1                 | .....             | .....             | 1         | 1            |
| "                 | 1                | .....                 | .....             | 1                 | 1          | .....             | .....             | .....             | .....     | 1            |
| Sportous.....     | 1                | .....                 | .....             | 1                 | 1          | .....             | .....             | .....             | .....     | 1            |
| Maxime.....       | 1                | .....                 | .....             | .....             | .....      | .....             | .....             | 1                 | 1         | 1            |
| <b>Total.....</b> |                  | <b>601</b>            | <b>9</b>          | <b>201</b>        | <b>811</b> | <b>55</b>         | <b>5</b>          | <b>15</b>         | <b>75</b> | <b>886</b>   |





[illegible]



|                    |                       |                                       |
|--------------------|-----------------------|---------------------------------------|
| ST. LAWRENCE WARD— | St. Lawrence street,  | 75 feet of 6 in. and 70 feet of 4 in. |
| ST. JAMES WARD—    | St. Catherine street, | 190 do of 6 in. and 70 do of 4 in.    |
| ST. MARY'S WARD—   | do                    | 130 do of 4 in.                       |
| do                 | Visitation street,    | 340 do of 6 in.                       |

Making a total of 6445 of 6 in. and 2905 of 4 inch, to be deducted from the quantities in schedule No. 13; as also must be the following lengths of mains which were left in the ground in 1888 and of which no note was made in the report for that year, viz:—

|                    |                |  |
|--------------------|----------------|--|
| ST. LOUIS WARD—    | Craig street,  | 1650 feet of 8 in. main, 40 feet of 4 in.                          |
| ST. JAMES WARD—    | do             | 2460 do. of 6 in. do. 60 do. do.                                   |
| ST. MARY WARD—     | do             | 1350 do. of 6 in. do. 60 do. do.                                   |
| ST. LAWRENCE WARD— | do             | 1840 do. of 8 in. do. 50 do. do.                                   |
| ST. ANTOINE WARD—  | do             | 771 do. of 8 in. do. 179 do. of 6 in. and 30 of 4 in.              |
| HOHELAGA WARD—     | Dezery street, | 2100 do. of 6 in. were taken up. Amounting to 10,590 feet of pipe. |

In all to be deducted for pipes taken out or abandoned in the ground in 1888 and 1889, and not heretofore recorded 19,940 feet or 3.77 miles.





**Schedule showing the Pipes, &c.—Continued.**

| NAMES OF STREETS            | Length in feet of cast iron pipes. |     |     |     |      |     |     | No. of Valves. |     |       |     |     |     |     | Wrought Iron Pipes. | Hydraulic. | Length of Lead Pipes in feet | Houses Supplied | Brass Cocks | Air Cocks |
|-----------------------------|------------------------------------|-----|-----|-----|------|-----|-----|----------------|-----|-------|-----|-----|-----|-----|---------------------|------------|------------------------------|-----------------|-------------|-----------|
|                             | 30"                                | 24" | 20" | 16" | 12"  | 10" | 8"  | 6"             | 4"  | Total | 30" | 24" | 20" | 16" | 12"                 | 10"        | 8"                           | 6"              | 4"          | Total     |
| <i>St. Lawrence W'd—Con</i> |                                    |     |     |     |      |     |     |                |     |       |     |     |     |     |                     |            |                              |                 |             |           |
| Brought forward.            |                                    |     |     |     |      | 336 | 12  | 215            | 36  | 2577  |     |     |     |     | 1                   | 2          |                              | 4               | 3           | 11        |
| Craig .....                 |                                    |     |     |     | 21   |     |     |                |     | 21    |     |     |     |     |                     |            |                              |                 |             |           |
| Anderson .....              |                                    |     |     |     |      |     |     |                |     |       |     |     |     |     |                     |            |                              |                 |             |           |
| Park Avenue .....           |                                    |     |     |     |      |     |     |                |     |       |     |     |     |     |                     |            |                              |                 |             |           |
| Lagauchetière .....         |                                    |     |     |     |      |     |     |                |     |       |     |     |     |     |                     |            |                              |                 |             |           |
| Concord .....               |                                    |     |     |     |      |     |     | 372            |     | 372   |     |     |     |     |                     |            |                              |                 |             |           |
| St. Catherine .....         |                                    |     |     |     | 1182 |     | 20  | 374            | 9   | 1585  |     |     |     |     | 3                   |            |                              | 12              | 1           | 16        |
| Vitre .....                 |                                    |     |     |     |      |     |     |                |     |       |     |     |     |     |                     |            |                              |                 |             |           |
| St. Georges .....           |                                    |     |     |     |      |     |     |                | 3   | 3     |     |     |     |     |                     |            |                              |                 |             |           |
| St. Urbain .....            |                                    |     |     |     |      |     |     |                |     |       |     |     |     |     |                     |            |                              |                 |             |           |
| Bleury .....                |                                    |     |     |     |      |     | 14  |                |     | 14    |     |     |     |     |                     |            |                              |                 |             |           |
| St. Chs-Borromée .....      |                                    |     |     |     |      |     |     | 612            | 3   | 615   |     |     |     |     |                     |            |                              |                 |             |           |
| St. Lawrence .....          |                                    |     |     |     | 768  |     | 60  | 12             | 14  | 855   |     |     |     |     | 1                   |            |                              | 3               | 1           | 5         |
| Total .....                 |                                    |     |     |     | 1971 | 336 | 148 | 3522           | 65  | 6049  |     |     |     |     | 5                   | 2          |                              | 20              | 9           | 36        |
| <i>St. Louis Ward.</i>      |                                    |     |     |     |      |     |     |                |     |       |     |     |     |     |                     |            |                              |                 |             |           |
| Napoleon .....              |                                    |     |     |     |      |     |     |                |     |       |     |     |     |     |                     |            |                              |                 |             |           |
| Courville .....             |                                    |     |     |     |      | 240 |     |                | 46  | 246   |     |     |     |     |                     |            |                              |                 |             |           |
| Côté Lane .....             |                                    |     |     |     |      |     |     |                | 113 | 103   |     |     |     |     |                     |            |                              |                 |             |           |
| Charbrooke .....            |                                    |     |     |     |      |     | 20  |                |     | 20    |     |     |     |     |                     |            |                              |                 |             |           |
|                             |                                    |     |     |     |      |     |     |                |     |       |     |     |     |     |                     |            |                              |                 |             |           |







**Schedule showing the Pipes, &c.—Continued.**

| NAMES OF<br>STREETS. | Length in feet of cast iron pipes |     |     |     |     |     |    |    |    |       | No. of Valves. |     |     |     |     |     |       | Wrought<br>Iron Pipes | Hydrants | Length of<br>Lead Pipes<br>in feet | Houses<br>Supplied. | Brass Cocks. | Air Cocks. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |
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|                      | 30'                               | 24" | 20" | 16" | 12' | 10" | 8" | 6" | 4" | Total | 16"            | 20" | 24" | 30" | 36" | 42" | Total |                       |          |                                    |                     |              |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |
| St J-Bte W'd         |                                   |     |     |     |     |     |    |    |    |       |                |     |     |     |     |     |       |                       |          |                                    |                     |              |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | </ |



Schedule showing the Pipes, &c.—Continued.

| NAMES OF<br>STREETS.            | Length in feet of Cast Iron Pipes. |      |     |     |     |     |      |    |    |       | No. of Valves. |     |     |     |     |     |    |    |    |       | Wrought<br>Iron Pipes. | Hydrants | Length of<br>Laid Pipes<br>in feet. | Houses<br>Supplied | Brass Cocks. | Air Cocks. |     |     |     |     |     |     |     |
|---------------------------------|------------------------------------|------|-----|-----|-----|-----|------|----|----|-------|----------------|-----|-----|-----|-----|-----|----|----|----|-------|------------------------|----------|-------------------------------------|--------------------|--------------|------------|-----|-----|-----|-----|-----|-----|-----|
|                                 | 30"                                | 24"  | 20" | 16" | 12" | 10" | 8"   | 6" | 4" | Total | 30"            | 24" | 20" | 16" | 12" | 10" | 8" | 6" | 4" | Total |                        |          |                                     |                    |              |            |     |     |     |     |     |     |     |
| <i>St Gabriel<br/>Ward—Con.</i> |                                    |      |     |     |     |     |      |    |    |       |                |     |     |     |     |     |    |    |    |       |                        |          |                                     |                    |              |            |     |     |     |     |     |     |     |
| Brought forw'd                  |                                    |      |     |     |     |     |      | 90 | 12 | 913   |                |     |     |     |     |     |    |    |    | 2     | 2                      | 1526     | 79                                  | ...                | 75           | ...        | ... | ... | ... | ... | ... | 200 |     |
| Hibernian Road                  |                                    |      |     |     |     |     |      |    |    |       |                |     |     |     |     |     |    |    |    |       |                        | 64       | 4                                   | ...                | 4            | ...        | ... | ... | ... | ... | ... | ... |     |
| Coleraine                       |                                    |      |     |     |     |     |      |    |    |       |                |     |     |     |     |     |    |    |    |       |                        | 49       | 4                                   | ...                | 4            | ...        | ... | ... | ... | ... | ... | ... |     |
| Alwater Ave...                  | 274                                |      |     |     |     |     |      |    | 21 | 2763  | 4              |     |     |     |     |     |    |    |    | 4     | 8                      | 28       | 1                                   | ...                | 1            | ...        | ... | ... | ... | ... | ... | ... |     |
| Hopery                          |                                    |      |     |     |     |     |      |    |    |       |                |     |     |     |     |     |    |    |    |       |                        | 26       | 1                                   | ...                | 1            | ...        | ... | ... | ... | ... | ... | ... |     |
| Favard                          |                                    |      |     |     |     |     |      |    |    |       |                |     |     |     |     |     |    |    |    |       |                        | 93       | 1                                   | ...                | 1            | ...        | ... | ... | ... | ... | ... | ... |     |
| Bourgeois                       |                                    |      |     |     |     |     |      |    |    | 12    |                |     |     |     |     |     |    |    |    |       |                        | 429      | 16                                  | ...                | 16           | ...        | ... | ... | ... | ... | ... | ... |     |
| Grand Trunk                     |                                    |      |     |     |     |     |      |    |    |       |                |     |     |     |     |     |    |    |    |       |                        | 151      | 7                                   | ...                | 7            | ...        | ... | ... | ... | ... | ... | ... |     |
| Rushbrook                       |                                    |      |     |     |     |     |      |    |    |       |                |     |     |     |     |     |    |    |    |       |                        | ...      | ...                                 | ...                | ...          | ...        | ... | ... | ... | ... | ... | ... |     |
| Charron                         |                                    |      |     |     |     |     |      | 35 | 10 | 361   |                |     |     |     |     |     |    |    |    |       |                        | 515      | 21                                  | ...                | 26           | ...        | ... | ... | ... | ... | ... | ... |     |
| Wellington                      |                                    |      |     |     |     |     | 10   |    |    | 10    |                |     |     |     |     |     |    |    |    |       |                        | 65       | 2                                   | ...                | 1            | ...        | ... | ... | ... | ... | ... | ... | ... |
| Napoleon Road                   |                                    |      |     |     |     |     | 15   | 6  | 19 | 40    |                |     |     |     |     |     |    |    |    |       |                        | 62       | 5                                   | ...                | 3            | ...        | ... | ... | ... | ... | ... | ... | ... |
| Knox                            |                                    |      |     |     |     |     |      |    |    |       |                |     |     |     |     |     |    |    |    |       |                        | 365      | 1                                   | ...                | 17           | ...        | ... | ... | ... | ... | ... | ... | ... |
| Center                          | 110                                |      | 26  | 26  |     |     |      | 4  | 75 | 1275  |                |     |     |     |     |     |    |    |    |       | 2                      | 640      | 21                                  | ...                | 28           | ...        | ... | ... | ... | ... | ... | ... | ... |
| Manufacturers                   |                                    |      |     |     |     |     |      |    | 63 | 63    |                |     |     |     |     |     |    |    |    |       |                        | ...      | ...                                 | ...                | ...          | ...        | ... | ... | ... | ... | ... | ... | ... |
| St Patrick                      |                                    |      |     |     |     |     |      |    | 3  | 3     |                |     |     |     |     |     |    |    |    |       |                        | 218      | 1                                   | ...                | 13           | ...        | ... | ... | ... | ... | ... | ... | ... |
| Edingburg                       |                                    |      |     |     |     |     |      |    |    |       |                |     |     |     |     |     |    |    |    |       |                        | 30       | ...                                 | ...                | 2            | ...        | ... | ... | ... | ... | ... | ... | ... |
| Total.....                      | 2742                               | 1103 | 26  | 51  | 130 | 229 | 1454 | 4  | 1  |       |                |     |     |     |     |     |    |    |    | 6     | 12                     | 4257     | 20                                  | 1                  | 200          | ...        | ... | ... | ... | ... | ... | ... | ... |



# RECAPITULATION.

Schedule showing the Pipes, Hydrants, Valves, Services, &c, laid in the City of Montreal during the year 1889.

| WARDS.            | Length in feet of cast iron pipes. |       |       |       |       |       |     | No. of Valves |       |        |       |       |       |       | W.P. Iron Pipe | Hydrants. | Length of Lead Pipes in feet | Houses Supplied. | Brass Cocks | Air Cocks. |     |       |      |         |
|-------------------|------------------------------------|-------|-------|-------|-------|-------|-----|---------------|-------|--------|-------|-------|-------|-------|----------------|-----------|------------------------------|------------------|-------------|------------|-----|-------|------|---------|
|                   | Length in feet of cast iron pipes. |       |       |       |       |       |     | No. of Valves |       |        |       |       |       |       |                |           |                              |                  |             |            |     |       |      |         |
|                   | 30"                                | 24"   | 20"   | 16"   | 12"   | 10"   | 8"  | 6"            | 4"    | Total. | 30"   | 24"   | 20"   | 16"   |                |           |                              |                  |             |            | 12" | 10"   | 8"   | 6"      |
| East.....         | .....                              | ..... | ..... | ..... | ..... | 628   | 10  | 100           | 9     | 745    | ..... | ..... | ..... | ..... | .....          | 3         | 3                            | 1                | 2           | 9          | 2   | 315   | 15   | 15      |
| Center.....       | .....                              | ..... | ..... | ..... | 1192  | 240   | 30  | 93            | 13    | 1568   | ..... | ..... | ..... | ..... | .....          | 3         | 2                            | 2                | 1           | 8          | 5   | 18    | 2    | 1       |
| West.....         | .....                              | ..... | ..... | ..... | 1068  | 569   | 51  | 146           | 45    | 1879   | ..... | ..... | ..... | ..... | .....          | 1         | 2                            | 2                | 2           | 7          | 6   | 76    | 7    | 4       |
| St. Ann.....      | .....                              | ..... | ..... | ..... | 4051  | 351   | 252 | 489           | 50    | 5213   | ..... | ..... | ..... | ..... | .....          | 5         | 1                            | 2                | 2           | 35         | 36  | 1917  | 91   | 80      |
| St. Antoine.....  | .....                              | ..... | ..... | ..... | 3413  | 225   | 189 | 2238          | 487   | 6531   | ..... | ..... | ..... | ..... | .....          | 7         | 1                            | 26               | 8           | 42         | 24  | 8464  | 344  | 58      |
| St. Lawrence..... | .....                              | ..... | ..... | ..... | 1971  | 336   | 148 | 3522          | 65    | 6042   | ..... | ..... | ..... | ..... | .....          | 5         | 2                            | 20               | 9           | 36         | 13  | 6136  | 274  | 6       |
| St. Louis.....    | .....                              | ..... | ..... | ..... | 1740  | 207   | 44  | 848           | 228   | 3067   | ..... | ..... | ..... | ..... | .....          | 2         | 2                            | 14               | 6           | 24         | 16  | 2555  | 132  | 7       |
| St. James.....    | .....                              | ..... | ..... | ..... | 3917  | ..... | 64  | 1388          | 421   | 5790   | ..... | ..... | ..... | ..... | .....          | 2         | .....                        | 14               | 4           | 20         | 15  | 6711  | 330  | 30      |
| St. Mary.....     | .....                              | ..... | ..... | ..... | 3484  | 9     | 141 | 1488          | 193   | 5321   | ..... | ..... | ..... | ..... | .....          | 9         | .....                        | 25               | 8           | 42         | 36  | 6015  | 374  | 37      |
| St. J.-Bte.....   | .....                              | ..... | ..... | ..... | 1668  | ..... | 6   | 7243          | 18    | 8935   | ..... | ..... | ..... | ..... | .....          | 3         | .....                        | 12               | 1           | 16         | 22  | 17648 | 972  | 1       |
| Hochelaga.....    | .....                              | ..... | ..... | ..... | 467   | 885   | 23  | 1286          | ..... | 2641   | ..... | ..... | ..... | ..... | .....          | 2         | 1                            | 3                | 2           | 8          | 7   | 4324  | 179  | 32      |
| St. Gabriel.....  | 2742                               | 1103  | ..... | ..... | ..... | 26    | 51  | 1303          | 229   | 5454   | 4     | 1     | ..... | ..... | .....          | .....     | 1                            | .....            | 6           | 12         | 14  | 4257  | 205  | 5       |
|                   | 2742                               | 1103  | ..... | ..... | 22970 | 3474  | 989 | 20124         | 1784  | 83186  | 4     | 1     | ..... | ..... | 39             | 14        | 6                            | 140              | 55          | 259        | 196 | 58435 | 2934 | 1822748 |

During the year, in the following wards, 4 and 6 in. mains, were abandoned in the ground, viz:—

|                 |                     |   |
|-----------------|---------------------|---|
| CENTRE WARD—    | Common street,      | 300 feet of 6 in. and 300 feet of 4 in. |
| do              | St. Lambert's Hill, | 190 do of 4 in.                         |
| WEST WARD—      | Common street,      | 1350 do of 4 in.                        |
| St. ANN'S WARD— | William street,     | 4785 do of 6 in. and 490 do. of 4 in.   |
| do              | McGill street,      | 550 do of 6 in. and 40 do. of 4 in.     |
| do              | Dupré lane,         | 265 do of 4 in.                         |
| do              | College street,     | 75 do of 6 in.                          |
| do              | Common street,      | 120 do of 6 in.                         |

|                    |                       |                      |                  |
|--------------------|-----------------------|----------------------|------------------|
| ST. LAWRENCE WARD— | St. Lawrence street,  | 75 feet of 6 in. and | 70 feet of 4 in. |
| ST. JAMES WARD—    | St. Catherine street, | 190 do of 6 in. and  | 70 do of 4 in.   |
| ST. MARY'S WARD—   | do                    | 130 do of 4 in.      |                  |
| do                 | Visitation street,    | 340 do of 6 in.      |                  |

Making a total of 6445 of 6 in. and 2905 of 4 inch, to be deducted from the quantities in schedule No. 13; as also must be the following lengths of mains which were left in the ground in 1888 and of which no note was made in the report for that year, viz :—

|                    |               |                                  |                                   |
|--------------------|---------------|----------------------------------|-----------------------------------|
| ST. LOUIS WARD—    | Craig street, | 1650 feet of 8 in. main,         | 40 feet of 4 in.                  |
| ST. JAMES WARD—    | do            | 2460 do. of 6 in. do.            | 60 do. do.                        |
| ST. MARY WARD—     | do            | 1350 do. of 6 in. do.            | 60 do. do.                        |
| ST. LAWRENCE WARD— | do            | 1840 do. of 8 in. do.            | 50 do. do.                        |
| ST. ANTOINE WARD—  | do            | 771 do. of 8 in. do.             | 179 do. of 6 in. and 30 of 4 in.  |
| HOCHELAGA WARD—    | Dezerystreet, | 2100 do. of 6 in. were taken up. | Amounting to 10,590 feet of pipe. |

In all to be deducted for pipes taken out or abandoned in the ground in 1888 and 1889, and not heretofore recorded 19,940 feet or 3.77 miles.

**Schedule No. 13, showing the Pipes, Hydrants and Valves laid down and the number of Houses supplied with water in the City of Montreal up to 1st January 1890.**

| WARDS.          | MAIN PIPES. |       |      |      |        |       |      |        |        |      |        |        | Lead Pipes. | VALVES. |     |     |     |     |     |    |     |     |    |        |      | HY-DRANTS. |         | REMARKS. |
|-----------------|-------------|-------|------|------|--------|-------|------|--------|--------|------|--------|--------|-------------|---------|-----|-----|-----|-----|-----|----|-----|-----|----|--------|------|------------|---------|----------|
|                 |             |       |      |      |        |       |      |        |        |      |        |        |             |         |     |     |     |     |     |    |     |     |    |        |      |            |         |          |
|                 | 30"         | 24"   | 20"  | 16"  | 12"    | 10"   | 8"   | 6"     | 4"     | 3"   | 1 1/2" | Total. |             | 30"     | 24" | 20" | 16" | 12" | 10" | 8" | 6"  | 4"  | 3" | 2 1/2" | 1"   | Public     | Private |          |
| East.....       |             |       |      |      | 1400   | 6109  | 312  | 2432   | 7621   | 713  | 80     | 18667  |             |         |     |     |     | 1   | 8   | 4  | 14  | 33  | 2  |        | 62   | 42         | 1       | 794      |
| Center .....    |             | 1255  |      |      | 2544   | 3658  | 52   | 3503   | 6518   | 161  | 35     | 17726  | 165         |         |     |     |     | 5   | 8   | 4  | 13  | 31  | 7  |        | 70   | 31         | 4       | 610      |
| West.....       |             | 1490  |      | 654  | 3074   | 5593  | 729  | 5683   | 6904   | 585  |        | 24712  |             |         |     |     | 1   | 6   | 16  | 4  | 13  | 34  | 18 |        | 91   | 47         |         | 825      |
| S. Ann.....     |             |       |      |      | 10837  | 20083 | 871  | 21272  | 53822  | 53   |        | 106938 | 1031        |         |     |     |     | 17  | 26  | 3  | 70  | 106 | 3  | 1      | 226  | 198        | 16      | 3863     |
| St. Antoine...  | 1340        | 2272  | 1194 | 1940 | 40291  | 12060 |      | 42877  | 107486 | 523  | 442    | 210425 | 1618        |         |     | 2   | 1   | 53  | 22  | 12 | 98  | 205 | 5  |        | 402  | 303        | 7       | 7194     |
| St. Lawrence.   | 2135        | 2640  |      |      | 6509   | 4581  | 1237 | 23466  | 25385  |      |        | 65953  | 894         |         |     |     | 1   | 9   | 7   | 13 | 61  | 55  | 1  |        | 146  | 111        |         | 3378     |
| St. Louis.....  | 1645        |       |      |      | 3444   | 11397 | 81   | 21760  | 32631  |      |        | 70958  | 3062        |         |     |     |     | 7   | 12  | 1  | 47  | 59  |    |        | 127  | 114        |         | 3974     |
| St James.....   | 2488        |       |      |      | 9563   | 2940  | 443  | 29636  | 43736  |      |        | 88808  | 630         |         |     |     |     | 9   | 4   | 2  | 74  | 78  |    |        | 168  | 141        | 2       | 6110     |
| St. Mary.....   | 2585        | 6640  |      | 100  | 10397  | 9244  | 157  | 48171  | 41090  | 60   |        | 118444 | 2400        |         |     | 1   | 3   | 20  | 13  |    | 108 | 78  | 1  |        | 225  | 179        | 8       | 6194     |
| Jt. J.-Bte..... |             |       |      |      | 11106  | 360   | 74   | 24815  | 237    |      |        | 36592  |             |         |     |     |     | 16  |     |    | 35  | 2   |    |        | 53   | 81         |         | 2645     |
| Hochelaga.....  |             | 3700  |      |      | 5967   | 7050  | 23   | 13154  | 15813  |      |        | 45707  | 455         |         |     |     |     | 7   | 5   |    | 26  | 24  | 1  |        | 63   | 58         |         | 1460     |
| S. Gabriel....  |             |       |      |      |        | 26    | 118  | 7234   | 334    |      |        | 7712   |             |         |     |     |     |     |     | 2  | 9   | 9   |    |        | 20   | 36         |         | 528      |
| Total.....      | 10193       | 17997 | 1194 | 2694 | 105132 | 63101 | 4097 | 244003 | 341577 | 2095 | 557    | 812540 | 10224       | 3       | 10  | 2   | 3   | 149 | 121 | 44 | 568 | 714 | 38 | 1      | 1653 | 1341       | 38      | 37574    |
| Rising Main...  | 16102       | 27709 |      |      | 1674   |       |      | 15     |        |      |        | 40500  |             |         |     |     | 1   | 2   |     |    | 2   |     |    |        | 42   |            |         | 3        |
| Exh. Grounds    |             |       |      |      |        |       |      |        | 5484   |      |        | 5484   |             |         |     |     |     |     |     |    |     | 3   |    |        | 3    | 4          |         |          |
| Exh. Ry., Pt.   |             |       |      |      |        |       |      |        |        |      |        |        |             |         |     |     |     |     |     |    |     |     |    |        |      |            |         |          |
| G. T. Charles.  |             |       |      |      |        |       |      | 7737   | 1861   |      |        | 9598   |             |         |     |     |     |     |     |    |     |     |    |        |      |            | 20      |          |
| St. Charles.    |             |       |      |      |        |       |      |        |        |      |        |        |             |         |     |     |     |     |     |    |     |     |    |        |      |            |         |          |
| Grand total...  | 26295       | 45706 | 1194 | 2694 | 106806 | 83101 | 4097 | 251755 | 348922 | 2095 | 557    | 873222 | 10224       | 16      | 34  | 2   | 4   | 151 | 121 | 44 | 570 | 717 | 38 | 1      | 1698 | 1345       | 58      | 37577    |

No. 14.—Schedule showing the average pressure in the City Mains during the year 1889.

| Month.                      | At W. Work Shop<br>cor. St Chas-Borée | Central Fire Station<br>Craig street. | Fire Station No. 2<br>St. Gabriel street. | Fire Station No. 3<br>Wellington street. | Fire Station No. 4<br>Chauvoillez square. | Fire Station No. 5<br>St. Catherine street. | Fire Station No. 6<br>Ontario street. | Fire Station No. 7<br>Dalhousie Square. | Fire Station No. 8<br>Craig street. | Fire Station No. 9<br>Centre street. | Fire Station No. 10<br>St. Catherine street. | Fire Station No. 11<br>Ontario street. | Fire Station No. 12<br>Beignures street. | Fire Station No. 13<br>Deserz street. | Fire Station No. 14<br>St. Dominique st. | Fire Station No. 15<br>Island street<br>Mt. Gabriel Ward | Average<br>surface of water in<br>McTavish Reservoir |
|-----------------------------|---------------------------------------|---------------------------------------|---|--|---|---|---------------------------------------|---|-------------------------------------|--------------------------------------|--|--|--|---------------------------------------|--|--|--|
| Height<br>above<br>datum... | 42.06                                 | 32.00                                 | 57.06                                     | 27.00                                    | .....                                     | 97.01                                       | 66.00                                 | 70.56                                   | 43.00                               | 26.01                                | 130.00                                       | 70.00                                  | 36.00                                    | 44.00                                 | .....                                    | .....  | 203.00   |
| 1889                        |                                       |                                       |   |  |   |   |                                       |   |                                     |                                      |  |  |  |                                       |  |  |  |
| January....                 | 65.00                                 | 72.00                                 | 63.00                                     | 77.00                                    | 79.00                                     | 45.00                                       | 65.00                                 | 59.00                                   | 71.00                               | 72.00                                | 30.00  | 67.00                                  | 77.00                                    | 69.00                                 | 106.00                                   | 70.00  | 204.76   |
| February ..                 | 65.00                                 | 72.00                                 | 67.00                                     | 77.00                                    | 78.00                                     | 47.00                                       | 65.00                                 | 60.00                                   | 71.00                               | 73.00                                | 30.00  | 69.00                                  | 72.00                                    | 69.00                                 | 106.00                                   | 70.00  | 204.34   |
| March .....                 | 65.00                                 | 72.00                                 | 66.00                                     | 79.00                                    | 79.00                                     | 45.01                                       | 65.00                                 | 60.00                                   | 71.00                               | 75.00                                | 30.00  | 66.00                                  | 72.00                                    | 69.00                                 | 106.00                                   | 70.00  | 204.62   |
| April .....                 | 65.00                                 | 72.00                                 | 67.01                                     | 79.00                                    | 79.00                                     | 45.06                                       | 65.00                                 | 60.00                                   | 71.00                               | 75.00                                | 30.00  | 66.00                                  | 72.00                                    | 69.00                                 | 107.00                                   | 70.00  | 204.32   |
| May .....                   | 65.00                                 | 72.00                                 | 72.00                                     | 79.00                                    | 78.00                                     | 45.00                                       | 65.00                                 | .....                                   | 71.00                               | 75.00                                | 30.00  | 66.00                                  | 70.00                                    | 69.00                                 | 106.00                                   | 70.00  | 203.71   |
| June .....                  | 65.00                                 | 72.00                                 | 70.01                                     | 79.00                                    | 79.00                                     | 45.00                                       | .....                                 | .....                                   | .....                               | 75.00                                | 30.00  | 66.00                                  | 77.00                                    | 70.00                                 | 105.00                                   | 72.00  | 203.31   |
| July .....                  | 65.00                                 | 72.00                                 | 70.00                                     | 79.00                                    | 79.00                                     | 40.00                                       | .....                                 | .....                                   | .....                               | 75.00                                | 30.00  | 68.00                                  | 72.00                                    | 69.00                                 | 113.00                                   | 72.00  | 200.40   |
| August ....                 | 65.00                                 | 72.00                                 | 67.06                                     | 79.00                                    | 79.00                                     | 40.00                                       | .....                                 | .....                                   | .....                               | 75.00                                | 30.00  | 67.00                                  | 72.00                                    | 69.00                                 | 111.00                                   | 72.00  | 199.93   |
| September                   | 65.00                                 | 72.00                                 | 72.00                                     | 79.00                                    | 78.00                                     | 40.00                                       | 65.00                                 | .....                                   | 71.00                               | 72.00                                | 30.00  | 68.00                                  | 72.00                                    | 69.00                                 | 109.00                                   | 70.00  | 204.19   |
| October ....                | 65.00                                 | 72.00                                 | 70.00                                     | 77.00                                    | 77.00                                     | 42.01                                       | 65.00                                 | 59.00                                   | 71.00                               | 72.00                                | 30.00  | 66.00                                  | 72.00                                    | 69.00                                 | 111.00                                   | 70.00  | 204.38   |
| November                    | 65.00                                 | 72.00                                 | 70.00                                     | 79.00                                    | 78.00                                     | 42.01                                       | 65.00                                 | 55.00                                   | 71.00                               | 72.00                                | 30.00  | 66.00                                  | 72.00                                    | 69.00                                 | 109.00                                   | 71.00  | 204.19   |
| December.                   | 65.00                                 | 72.00                                 | 72.00                                     | 78.00                                    | 76.00                                     | 42.00                                       | 65.00                                 | 55.00                                   | 71.00                               | 72.00                                | 30.00  | 67.00                                  | 72.00                                    | 69.00                                 | 109.00                                   | 75.00  | 201.45   |
| Av'ge 1889                  | 65.00                                 | 72.00                                 | 68.83                                     | 78.40                                    | 78.21                                     | 43.00                                       | 65.00                                 | 57.17                                   | 71.01                               | 73.58                                | 30.00  | 66.83                                  | 71.82                                    | 69.08                                 | 108.16                                   | 71.00  | 203.55   |
| " 1888                      | 65.00                                 | 72.25                                 | 61.57                                     | 77.91                                    | 76.60                                     | 45.01                                       | 65.00                                 | 57.83                                   | 70.92                               | 70.09                                | 30.00  | 66.09                                  | 72.01                                    | 69.83                                 | .....                                    | 70.10  | 201.01   |

No 15.—Schedule showing the position of Public fountains erected in the City of Montreal, up to January 1890.

| No. | LOCATION.                                | Material          |                        |                  |                      |                 | Number of jets. |
|-----|--|-------------------|------------------------|------------------|----------------------|-----------------|-----------------|
|     |  | Cast Iron Basins. | Stone & Cement Basins. | Stone fountains. | Cast iron fountains. | Wood fountains. |                 |
| 1   | Beaver Hall Square.....                  |                   |                        |                  |                      |                 | 1               |
| 2   | Bellerive Park.....                      | 1                 |                        |                  |                      |                 | 1               |
| 3   | Bleury & Dorchester.....                 |                   |                        |                  |                      |                 | 1               |
| 4   | Bonsecours Market.....                   |                   |                        |                  |                      |                 | 1               |
| 5   | Chaboulliez Square.....                  |                   |                        |                  |                      |                 | 1               |
| 6   | Cherrier Square.....                     |                   |                        |                  | 1                    |                 | 5               |
| 7   | Colborne at Flour Sheds.....             |                   |                        |                  | 1                    |                 | 2               |
| 8   | Cour House Square.....                   | 2                 | 1                      | 2                |                      |                 | 5               |
| 9   | Craig at Victoria Square..               |                   |                        | 1                |                      |                 | 2               |
| 10  | Craig opposite Drill Hall.....           |                   |                        |                  | 1                    |                 | 1               |
| 11  | Custom House Square.....                 |                   |                        |                  | 1                    |                 | 1               |
| 12  | Dorchester and Dominion Square..         |                   |                        |                  | 1                    |                 | 1               |
| 13  | Dufferin Square.....                     |                   |                        |                  | 1                    |                 | 1               |
| 14  | Fulford near Notre Dame.....             |                   |                        |                  | 1                    |                 | 1               |
| 15  | Gailbault and St. Lawrence.....          |                   |                        |                  | 1                    |                 | 1               |
| 16  | Jacques Cartier Square and St. Paul..... | 1                 |                        |                  | 1                    |                 | 5               |
| 17  | Inspector, at Hay Market.....            |                   |                        |                  |                      |                 | 1               |
| 18  | McTavish Street, opposite Reservoir..... |                   |                        |                  | 1                    |                 | 1               |
| 19  | McGill and Common.....                   |                   |                        | 1                |                      |                 | 2               |
| 20  | Mill Street, at Waste Weir ..            |                   |                        |                  |                      | 1               | 2               |
| 21  | Moreau, near Notre Dame.....             |                   |                        |                  |                      |                 | 1               |
| 22  | Notre Dame and Susanne.....              |                   |                        |                  | 1                    |                 | 1               |
| 23  | Ontario and St. Denis.....               |                   |                        |                  |                      | 1               | 2               |
| 24  | Ontario and Champlain ..                 |                   |                        |                  |                      | 1               | 2               |
| 25  | Papineau Square.....                     |                   |                        |                  |                      | 1               | 2               |
| 26  | Park Avenue and St. Jean-Baptiste.....   |                   |                        |                  | 1                    |                 | 1               |
| 27  | Phillips Square.....                     |                   |                        |                  | 1                    |                 | 1               |
| 28  | Phillips Square and St. Catherine ..     |                   |                        |                  |                      |                 | 1               |
| 29  | Place D'Armes.....                       | 2                 | 1                      |                  |                      |                 | 5               |
| 30  | Prince and Common ..                     |                   |                        |                  | 1                    |                 | 2               |
| 31  | Rachel and Champlain ..                  |                   |                        |                  | 1                    |                 | 1               |
| 32  | Richmond Square.....                     |                   |                        |                  | 1                    |                 | 1               |
| 33  | Seigneurs and William.....               |                   |                        |                  | 1                    |                 | 1               |
| 34  | Sherbrooke, near Drummond.....           |                   |                        |                  |                      | 1               | 2               |
| 35  | Sherbrooke, corner Guy.....              |                   |                        |                  |                      | 1               | 1               |
| 36  | St. Ann's Market.....                    |                   |                        |                  |                      | 2               | 2               |
| 37  | St. Antoine Market.....                  |                   |                        |                  | 1                    |                 | 2               |
| 38  | St. Catherine and Delorimier.....        |                   |                        |                  |                      | 1               | 2               |
| 39  | St. Gabriel Market.....                  |                   |                        |                  |                      | 1               | 2               |
| 40  | St. Louis Square.....                    | 1                 |                        |                  | 2                    |                 | 7               |
| 41  | St. Patrick Square.....                  | 1                 |                        |                  | 1                    |                 | 2               |
| 42  | St. Patrick and Richmond ..              |                   |                        |                  | 1                    |                 | 1               |
| 43  | St. Patrick and Napoleon ..              |                   |                        |                  | 1                    |                 | 1               |
| 44  | St. Thomas and Ottawa.....               |                   |                        |                  | 1                    |                 | 2               |
| 45  | Victoria Square, South of Craig.....     |                   | 1                      | 2                |                      |                 | 7               |
| 46  | Victoria Square, North of Craig.....     | 3                 |                        |                  |                      |                 | 4               |
| 47  | Viger Square Basin No. 1 ..              |                   | 1                      |                  |                      |                 | 1               |
| 48  | Viger Square Basin No. 2 ..              | 3                 |                        |                  |                      |                 | 9               |
| 49  | Viger Square.....                        |                   |                        | 1                | 1                    |                 | 2               |
| 50  | Viger Market.....                        |                   |                        |                  |                      | 2               | 6               |
| 51  | Wellington and St. Patrick.....          |                   |                        |                  |                      | 1               | 2               |
| 52  | Wellington and Centre ..                 | 1                 |                        |                  |                      |                 | 1               |
| 53  | Wellington and Magdalen.....             |                   |                        |                  | 1                    |                 | 1               |

## SCHEDULE No. 15—Continued.

| Nos. | LOCATION.<br>(Distributed through Mountain Park.) | Street watering<br>nozzles | Cast iron foun-<br>tains. | Wood<br>fountains. | Cast iron cattle<br>drink'g troughs | Number of<br>jets. |
|------|---|----------------------------|---------------------------|--------------------|-------------------------------------|--------------------|
|      |   |                            |                           |                    |                                     |                    |
| 1    | High Level Reservoir.....                         | .....                      | 1                         | .....              | .....                               | 1                  |
| 2    | Foot of Elevator.....                             | .....                      | 1                         | .....              | 1                                   | 1                  |
| 3    | Along side Molson's fence.....                    | .....                      | .....                     | 1                  | .....                               | 1                  |
| 4    | Above Golf Club House.....                        | .....                      | .....                     | 1                  | .....                               | 1                  |
| 5    | About 500 ft. North of Elevator.....              | 1                          | .....                     | .....              | .....                               | .....              |
| 6    | Park Road running West side Hall property.....    | 1                          | .....                     | .....              | 1                                   | 1                  |
| 7    | Park Avenue, opposite St. Jean-Baptiste St.....   | 1                          | .....                     | .....              | .....                               | .....              |

| Nos. | LOCATION.<br>(Distributed along the Wharves.) | Cast iron foun-<br>tains. | Wood<br>fountains. | Cattle water<br>troughs. | Urinals. | Number of jets. | Street watering<br>nozzle. |
|------|---|---------------------------|--------------------|--------------------------|----------|-----------------|----------------------------|
|      |   |                           |                    |                          |          |                 |                            |
| 1    | Wind Mill Point.....                          | .....                     | 1                  | 1                        | 1        | 3               | .....                      |
| 2    | Allan's Wharf.....                            | 1                         | .....              | .....                    | 1        | .....           | .....                      |
| 3    | Allan's Sheds.....                            | .....                     | .....              | 1                        | .....    | .....           | .....                      |
| 4    | Custom House (opposite).....                  | .....                     | .....              | .....                    | 1        | 1               | .....                      |
| 5    | King's Basin.....                             | 1                         | .....              | .....                    | .....    | .....           | .....                      |
| 6    | Dominion line.....                            | .....                     | .....              | 1                        | 1        | 3               | .....                      |
| 7    | Jacques Cartier Square (foot of).....         | 1                         | .....              | .....                    | .....    | 1               | .....                      |
| 8    | St. Gabriel St. (foot of).....                | .....                     | .....              | .....                    | .....    | .....           | 1                          |
| 9    | St. Helen's Island Ferry.....                 | .....                     | 1                  | .....                    | .....    | 1               | .....                      |
| 10   | Beaver Line.....                              | .....                     | .....              | 1                        | 1        | 3               | .....                      |
| 11   | Donaldson Line.....                           | .....                     | .....              | .....                    | 1        | 1               | .....                      |
| 12   | Commissioner East of Barrack Street.....      | .....                     | .....              | .....                    | .....    | .....           | 1                          |
| 13   | Longueuil Ferry.....                          | .....                     | .....              | .....                    | 1        | 1               | .....                      |
| 14   | Marlboro Street (foot of).....                | .....                     | .....              | .....                    | 1        | .....           | .....                      |
| 15   | Desery Street (foot of).....                  | .....                     | .....              | .....                    | 1        | 2               | .....                      |

## ADMINISTRATION.

SCHEDULE No. 16.—Detailed statement of expenditure for the year 1889.

| AQUEDUCT.   | \$   | cts | \$    | cts |
|---|------|-----|-------|-----|
| Repairs to gates, fences and approaches.                  | 187  | 87  |       |     |
| " " bridges and painting.....                             | 422  | 63  |       |     |
| Cleaning ditches and berm.....                            | 283  | 27  |       |     |
| Cutting weeds.....  | 101  | 20  |       |     |
| Guardian's salary.....                                    | 600  | 00  |       |     |
| Assistant guardian's salary .....                         | 341  | 88  |       |     |
| Police service .....                                      | 217  | 30  |       |     |
| Repairing guardian's house.....                           | 148  | 16  |       |     |
| Sundries.....   | 43   | 06  | 2345  | 37  |
| <hr/>   |      |     |       |     |
| WHEEL HOUSE.  |      |     |       |     |
| D. Kearney chief engineer.....                            | 1600 | 00  |       |     |
| Candlish Asst. " .....                                    | 700  | 00  |       |     |
| Vallée " " .....  | 700  | 00  |       |     |
| C. and A. Lecourt, Oilers.....                            | 880  | 00  |       |     |
| Repairing machinery.....                                  | 105  | 77  |       |     |
| " building.....   | 172  | 93  |       |     |
| Coal for dwelling.....                                    | 235  | 28  |       |     |
| Grounds round building. ....                              | 433  | 31  |       |     |
| Sundries.....   | 68   | 10  |       |     |
| Supplies, oils, tallow.....                               | 702  | 78  |       |     |
| Test pits .....   | 76   | 54  | 6674  | 71  |
| <hr/>   |      |     |       |     |
| ENGINE HOUSE.   |      |     |       |     |
| Repairs to boilers, steam pipes, for new<br>boilers ..... | 429  | 79  |       |     |
| Repairs to machinery and painting en-<br>gine .....       | 621  | 75  |       |     |
| Repairs to engine and boiler houses....                   | 40   | 38  |       |     |
| " " coal shed and painting .....                          | 26   | 10  |       |     |
| Wages .....   | 5067 | 16  |       |     |
| Rent for land .....                                       | 50   | 00  |       |     |
| Coal for steam.....                                       | 7833 | 68  |       |     |
| S. Veary, engineer.....                                   | 1000 | 00  |       |     |
| Sundries.....   | 164  | 11  |       |     |
| Sight feed lubricator .....                               | 60   | 00  |       |     |
| Supplies, oil, tallow, &c.....                            | 667  | 63  | 15960 | 60  |
| <hr/>   |      |     |       |     |
| Carried.....  |      |     | 23980 | 68  |

|                      | \$ | cts | \$    | cts |
|----------------------|----|-----|-------|-----|
| Brought forward..... |    |     | 23980 | 68  |

### TAIL RACE.

|   |      |    |      |    |
|---|------|----|------|----|
| Rebuilding wood work of bridge on<br>Lower Lachine Road ..... | 1275 | 21 |      |    |
| Rebuilding fences.....  | 26   | 66 | 1301 | 87 |

### RESERVOIRS.

|                           |     |    |      |    |
|---------------------------|-----|----|------|----|
| Guardian's salary.....    | 800 | 00 |      |    |
| McTavish, repairs.....    | 866 | 44 |      |    |
| Shovelling snow.....      | 14  | 36 |      |    |
| Fuel and light.....       | 103 | 39 |      |    |
| Sundries.....             | 80  | 74 |      |    |
| High level, repairs ..... | 401 | 06 |      |    |
| “ “ cleaning .....        | 105 | 23 | 2371 | 22 |

### PIPE TRACK.

|                                     |    |    |     |    |
|-------------------------------------|----|----|-----|----|
| Repairs to valves.....              | 42 | 72 |     |    |
| Staying wall at Atwater Avenue..... | 92 | 12 | 134 | 84 |

### HYDRANTS.

|   |      |    |      |    |
|---|------|----|------|----|
| Inspecting, wages.....                  | 4833 | 81 |      |    |
| Repairing, wages and materials.....     | 2900 | 74 |      |    |
| Thawing, horses and laborers.....       | 395  | 73 |      |    |
| Rent of tap house in St. J.-Bte Ward... | 96   | 00 |      |    |
| New boiler .....                        | 241  | 94 | 8468 | 22 |

### DISTRIBUTION PIPES.

|  |       |    |       |    |
|--|-------|----|-------|----|
| Repairs to mains services and valves,<br>wages.....    | 15596 | 31 |       |    |
| Thawing pipe and carting water.....                    | 324   | 58 |       |    |
| Inspecting service pipes inside houses..               | 2808  | 75 |       |    |
| Dress for 5 inspectors.....                            | 202   | 00 |       |    |
| Repairs to footpaths and services boxes:<br>wages..... | 1108  | 13 |       |    |
| Materials, iron, castings, lead, tin, &c .             | 339   | 06 |       |    |
| “ wood, planks, nails, &c.....                         | 400   | 69 |       |    |
| “ bricks, cement, sand, &c.....                        | 40    | 86 |       |    |
| “ rope, drain pipes, &c.....                           | 10    | 38 | 20830 | 76 |
| Carried.....   |       |    | 57087 | 59 |



|                         | \$ | cts | \$    | cts |
|-------------------------|----|-----|-------|-----|
| Brought forward .... .. |    |     | 57087 | 59  |

## PUBLIC FOUNTAINS.

|  |      |    |      |    |
|--|------|----|------|----|
| Repairing, wages.....                  | 918  | 22 |      |    |
| "    materials.....                    | 143  | 51 |      |    |
| Painting .....                         | 90   | 00 |      |    |
| New troughs and drinking fountains.... | 1225 | 06 | 2376 | 79 |

## WORK SHOP ON LAGAUCHETIÈRE STREET.

|  |      |    |       |    |
|--|------|----|-------|----|
| Wages, foreman, clerks, turncocks,<br>materials &c ..... | 8389 | 14 |       |    |
| Iron, spikes, nails, tin, lead &c.....                   | 18   | 89 |       |    |
| Timber, wood, coal oil, &c.....                          | 9    | 50 |       |    |
| Tools, pails, drinking cups &c.....                      | 37   | 34 |       |    |
| Rent of foreman's house.....                             | 200  | 00 |       |    |
| Telephone connections .....                              | 456  | 83 |       |    |
| Fuel and light.....                                      | 882  | 46 |       |    |
| Sundries.....  | 34   | 58 |       |    |
| Repairing buildings, scales &c ....                      | 420  | 01 | 10448 | 75 |

## ENGINE HOUSE AT MCTAVISH STREET.

|   |      |    |      |    |
|---|------|----|------|----|
| One stoker and one ass't engineer ..... | 1365 | 52 |      |    |
| Fuel for engine.....                    | 1008 | 35 |      |    |
| Oil, tallows, &c.....                   | 109  | 37 |      |    |
| Repairs to building, new porch.....     | 276  | 65 |      |    |
| "    " machinery.....                   | 224  | 77 |      |    |
| Sundry tools.....                       | 31   | 26 |      |    |
| Sundries .....                          | 243  | 89 | 3259 | 81 |

## METER DEPARTMENT.

|   |      |    |       |    |
|---|------|----|-------|----|
| 2 meter inspectors.....                 | 1603 | 50 |       |    |
| Testing, placing and repairing meters.. | 2369 | 37 |       |    |
| New meters.....                         | 5755 | 40 | 9728  | 27 |
| Carried.....                            |      |    | 82901 | 21 |

|                      | \$ | cts | \$    | cts |
|----------------------|----|-----|-------|-----|
| Brought forward..... |    |     | 82901 | 21  |

**WORK SHOP AT WHEEL HOUSE.**

|                              |    |    |    |    |
|------------------------------|----|----|----|----|
| Pipe and machinery dies..... | 44 | 93 |    |    |
| Sundries .....               | 1  | 70 | 46 | 63 |

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**MISCELLANEOUS.**

|   |     |    |      |    |
|---|-----|----|------|----|
| Contingencies for office, drawing paper &c.....         | 195 | 14 |      |    |
| Postage stamps, carters, sundries, &c...                | 416 | 47 |      |    |
| Horse keep superintendent .....                         | 600 | 00 |      |    |
| "    "    foreman.....                                  | 400 | 00 |      |    |
| Damages.....  | 539 | 60 |      |    |
| School taxes and assessment outside municipalities..... | 776 | 99 | 2928 | 20 |

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**STAFF.**

|                           |      |    |      |    |
|---------------------------|------|----|------|----|
| Superintendent.....       | 3000 | 00 |      |    |
| Ass't Superintendent..... | 650  | 00 |      |    |
| Draughtsman.....          | 936  | 00 |      |    |
| Accountant.....           | 1000 | 00 |      |    |
| Meter clerk. ....         | 800  | 00 |      |    |
| General " .....           | 600  | 00 |      |    |
| Ass't engineer.....       | 156  | 00 |      |    |
| Late superintendent ..... | 516  | 60 | 7658 | 60 |

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**LOANS.****\$93534 64****PIPE LAYING.**

|                           |       |    |  |  |
|---------------------------|-------|----|--|--|
| Wages .....               | 91941 | 90 |  |  |
| Tin, lead and zinc.....   | 6429  | 21 |  |  |
| Lead pipes.....           | 7347  | 21 |  |  |
| Copper, brass works ..... | 4875  | 12 |  |  |
| Timber, cord wood .....   | 2419  | 86 |  |  |
| Bricks, sand, clay.....   | 2397  | 27 |  |  |
| Drain pipes.....          | 361   | 03 |  |  |
| Special castings.....     | 26555 | 27 |  |  |
| Cement .....              | 784   | 74 |  |  |
| Iron steel.....           | 1553  | 22 |  |  |
| Tools .....               | 1037  | 74 |  |  |

---

Carried..... 145712 57

**93534 64**

|                             | \$     | cts |  | \$     | cts |
|-----------------------------|--------|-----|--|--------|-----|
| Brought forward...          | 145712 | 57  |  | 93534  | 64  |
| Packing.....                | 241    | 28  |  |        |     |
| Wrought iron pipes.....     | 527    | 62  |  |        |     |
| Cast iron pipes.....        | 56765  | 31  |  |        |     |
| Valve and service stones... | 1549   | 50  |  |        |     |
| Sundries.....               | 1134   | 92  |  |        |     |
| Rock excavation in St.      |        |     |  |        |     |
| J.-Bte Ward.....            | 2256   | 45  |  |        |     |
| Coke.....                   | 678    | 30  |  |        |     |
| Carting pipes.....          | 2116   | 57  |  |        |     |
| Inspecting and testing      |        |     |  |        |     |
| pipes.....                  | 1060   | 73  |  |        |     |
| Duty paid on pipes bought   |        |     |  |        |     |
| in 1888.....                | 1175   | 06  |  | 213208 | 31  |

**SPECIALS.**

|                            |       |    |       |    |        |
|----------------------------|-------|----|-------|----|--------|
| O. Champagne for pro-      |       |    |       |    |        |
| fessional service.....     | 357   | 00 |       |    |        |
| Worthington engine, ba-    |       |    |       |    |        |
| lance .....                | 1.148 | 58 |       |    |        |
| Kearney, (settlement)..... | 6000  | 00 | 19505 | 58 | 232713 |
|                            |       |    |       |    | 89     |
|                            |       |    |       |    | 326248 |
|                            |       |    |       |    | 53     |

SCHEDULE No. 17.—Inventory of stock on hand, January 1890.

| DESCRIPTION.               | 30"   | 24"   | 20"   | 16"   | 12"   | 10"   | 8"    | 6"    | 4"  | 3"    |
|----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-----|-------|
| Cast Iron Pipes (new)..... | 542   | 327   | 149   | 872   | 881   | 1716  | 728   | 1518  | 630 | ..... |
| Cast Iron Pipes (old)..... | ..... | 24    | 9     | ..... | 145   | ..... | ..... | ..... | 72  | ..... |
| Stop-Valves.....           | 1     | 2     | ..... | 2     | 3     | 3     | 7     | 2     | 19  | 18    |
| Slip Sockets.....          | 1     | 13    | 9     | 5     | 22    | 9     | 47    | 11    | 9   | 6     |
| Cast Iron Caps.....        | ..... | ..... | ..... | 4     | 16    | 3     | 5     | 19    | 41  | 2     |
| Cast Iron plugs.....       | ..... | ..... | ..... | 3     | 10    | 14    | 25    | 8     | 40  | 2     |
| Cast Iron Double Ends..... | ..... | ..... | ..... | ..... | ..... | 4     | 1     | 30    | 2   | ..... |
| Cast Iron Elbows.....      | ..... | ..... | ..... | ..... | 3     | 3     | ..... | 12    | 25  | ..... |

| SIZE.     | 30x12 | 30x6 | 30x4 | 24x24 | 24x12 | 16x12 | 12x12 | 12x10 | 12x6 | 10x10 | 10x6 |
|-----------|-------|------|------|-------|-------|-------|-------|-------|------|-------|------|
| Crosses.. | 5     | 2    | 2    | 5     | 5     | 1     | 4     | 6     | 13   | 8     | 5    |

| SIZE.      | 10x4 | 8x8 | 8x6 | 8x4 | 6x6 | 4x4 | 4x3 |
|------------|------|-----|-----|-----|-----|-----|-----|
| Crosses .. | 1    | 2   | 16  | 16  | 6   | 4   | 4   |

| SIZE.      | 30x12 | 30x4 | 24x6 | 24x4 | 16x10 | 12x12 | 12x10 | 12x8 | 12x6 | 12x4 | 10x10 | 10x8 | 10x6 | 10x4 |
|------------|-------|------|------|------|-------|-------|-------|------|------|------|-------|------|------|------|
| Tee's..... | 5     | 1    | 4    | 1    | 2     | 6     | 4     | 28   | 28   | 1    | 4     | 6    | 7    | 6    |

| SIZE.      | 8x6 | 8x4 | 6x6 | 6x4 | 4x4 |
|------------|-----|-----|-----|-----|-----|
| Tee's..... | 2   | 1   | 6   | 5   | 4   |

## TAPERS.

| SIZE.          | 30x30 | 30x24 | 24x24 | 12x12 | 12x10 | 10x10 | 30x24 | 24x16 | 24x6 | 16x12 | 12x10 | 12x8 | 12x6 | 10x6 | 8x6 | 6x6 |
|----------------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|------|------|------|-----|-----|
| Breeches Pipes | 3     | 1     | 2     | 1     | 2     | 4     | 8     | 1     | 1    | 2     | 4     | 5    | 3    | 5    | 6   | ■   |

Wheel House September 30th 1889.

RESULT OF TEST MADE ON MESSRS KINGMAN & BROWN'S COAL. (INTERNATIONAL).

| Engine Started | Engine stopped. | Time pumping. | Counter at start. | Counter at stop. | Counts made. | Average strokes per minute. | Coal used, in lbs. | No. of lbs. of water raised to Reservoir per lb. of coal. | Total lbs. of water raised to Reservoir in lbs. | Water Meter at start | Water Meter at stop | Cubic ft. of water evaporated. | Water evaporated per lb. of coal. | Lbs. of residue found. | Percentage of residue. | Coal consumed p. sq ft. of grate bars per hour. | Coal consumed per horse power per hour. |
|----------------|-----------------|---------------|-------------------|------------------|--------------|-----------------------------|--------------------|---|---|----------------------|---------------------|--------------------------------|-----------------------------------|------------------------|------------------------|---|---|
| 8.20 a.m.      | 4.00 p.m.       | 7.40          | 951704            | 957211           | 5507         | 47.88                       | 9348               | 3240  | 30288500  | 16161                | 17315               | 1154                           | 717                               | 1264                   | 13.4                   | 18.4  | 2.9                                     |

REMARKS.—All efforts failed in getting an average speed higher than that above stated, for two hours after starting the steam was maintained at and above the required pressure of 110 lbs after which there was a gradual falling off, the steam falling on several occasions to 90 lbs. This trial clearly demonstrates that, with our present boiler arrangement, it is impracticable to use the above named or kindred coal in our service.

At the end of the trial the grate bars were found completely covered with slag, which bars I have much pleasure in saying came through the trial without being injured, and have further pleasure in stating that if it were possible, under existing conditions, to successfully burn the coal, Mr. Redpath, Asst. Thompson's engineer would accomplish the task.

The whole respectfully submitted.

I remain yours very respectfully.

D. KEARNEY, Esq P. W.

Wheel House October 29th. 1889.

TEST MADE WITH THE OBJECT OF ASCERTAINING THE ECONOMIC EFFICIENCY OF THE LEADWATER DEVICE FOR STEAM BOILER FURNACES  
AS APPLIED TO THE HEAT BOILER OF THE MONTREAL WATER WORKS.

| Engine started | Engine stop. | Time of pumping | Counter at start | Counter at stop | Counter made | Average strokes per minute | Coal consumed in lbs | Lbs. of water raised to reser. per lb. of coal. | Total water raised to Resv. in lbs | Water Meter at start | Water Meter at stop | Cubic ft. of water evaporated | Water evapo-rated per lb. of coal. | Lbs. of residue found. | Percentage of residue | Coal consumed persqr. foot of grate larap h | Coal consumed per horse power per hour. |
|----------------|--------------|-----------------|------------------|-----------------|--------------|----------------------------|----------------------|---|------------------------------------|----------------------|---------------------|-------------------------------|------------------------------------|------------------------|-----------------------|---|---|
| 7.30 a.m       | 5.30 p.m     | 10.00           | 90582            | 99166           | 884          | 57.23                      | 16100                | 2932  | 47112000                           | 42708                | 44403               | 1695.0                        | 6.95                               | 1078                   | 6%                    | 22.0  | 3.0                                     |
|                |              |                 |                  |                 |              |                            |                      | 3272  |                                    |                      |                     |                               |                                    |                        |                       |   |   |

340 lbs. more raised to Resv. per lbs. of scotch coal or 10 %

REMARKS.—There was no difficulty in obtaining all the steam required to run the engine full speed. The fires were not cleaned during the run, and the slag was easily removed from the bars at the end of the test. Comparing this ten hours test with a ten hours run with scotch coal on the 1st. of April 1889. I find a difference in favor of scotch coal of 340 lbs. more water raised to the Reservoir per lbs. of coal or 10 %.

By computing the cost of both coals per ton, the commercial advantage can be arrived at, which costs I have not at hand.

The whole respectfully submitted

I remain Yours truly

B. D. McCONNELL, Esq.

D. KEARNEY

Supt. Water Works

Engr P. W.

Wheel House November 9th 1889.

TEST MADE WITH SCOTCH STREAM COAL AND LEADBEATER FURNACE.

| Engine started. | Engine stopped. | Pumping hrs. | Counter at start. | Counter at stop. | Counts made. | Avg strokes made per min. | Coal consumed in lbs. | Lbs. of water raised to level per lb. of coal. | Total lbs. of water raised to Reservoir. | Water Meter at start. | Water Meter at stop. | Cubic feet of water evaporated. | Water evaporated per lbs. of coal. | Lbs. of residue found. | Percentage of residue. | Coal consumed per sq. ft. of grate bars. | Coal consumed per H. P. hr. | Temp. of feed water. |
|-----------------|-----------------|--------------|-------------------|------------------|--------------|---------------------------|-----------------------|--|--|-----------------------|----------------------|---------------------------------|------------------------------------|------------------------|------------------------|--|-----------------------------|----------------------|
| 7.30 a.m.       | 5.30 p.m.       | h. m.        | 155,764           | 163,799          | 8,635        | 57.57                     | 17103                 | 2773.6   | 47,492,500                               | 55,464                | 57,072               | 1,808                           | 6.2                                | 1,434                  | 8.3                    | 23                                       | 3.3                         | 187°                 |

Foot pound duty per 100 lbs. of coal 59,424,633.

Wheel House November 13th 1889.

TEST MADE WITH KINGMAN & BROWN INTERNATIONAL COAL AND THE LEADBEATER FURNACE. THE COAL BEING HAND PICKED AND FRESH MINED.

| h. m.     |           |       |         |         |      |       |       |        |            |        |        |       |     |       |     |      |     |      |
|-----------|-----------|-------|---------|---------|------|-------|-------|--------|------------|--------|--------|-------|-----|-------|-----|------|-----|------|
| 7 30 a.m. | 5 30 p.m. | 10.00 | 175,910 | 184,512 | 8602 | 57.34 | 15760 | 3062.3 | 47,311,000 | 50,359 | 61,003 | 1,646 | 6.9 | 1,070 | 6.7 | 21.3 | 3.2 | 193° |

Foot pound duty per 100 lbs of coal 64,242,083.

Wheel House November 19th 1889.

TEST MADE WITH WELSH ANTHRACITE COAL AND THE LEADBEATER FURNACE.

| h. m.     | h. m.     | h. m. | h. m.   | h. m.   | h. m. | h. m. | h. m.  | h. m.  | h. m.      | h. m.  | h. m.  | h. m. | h. m. | h. m. | h. m. | h. m. | h. m. | h. m. | h. m. |
|-----------|-----------|-------|---------|---------|-------|-------|--------|--------|------------|--------|--------|-------|-------|-------|-------|-------|-------|-------|-------|
| 7.35 a.m. | 5.35 p.m. | 10.00 | 205,822 | 214,401 | 8,579 | 57.19 | 12,580 | 3756.7 | 47,184,500 | 65,134 | 66,760 | 1,626 | 8.5   | 826   | 4.2   | 17    | 3.3   | 182°  |       |

Foot pound duty per 100 lbs. of coal 80,393,107.

9.4 per cent in favor of International Coal over the Scotch Coal  
16.4 " " " " Welsh Anthracite Coal over Internat. Coal.

B. D. McCONNELL, Esqr.,

Supt. Water Works.

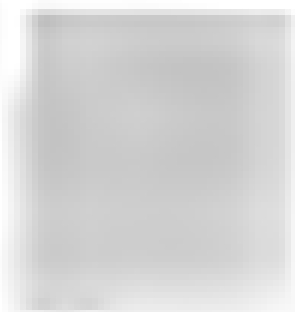
D. KEARNEY,

Engr. P. W.









# ANNUAL REPORT

OF THE

SUPERINTENDENT

OF THE

## Montreal Water Works

FOR THE

YEAR ENDING 31st DECEMBER 1890



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Montreal :

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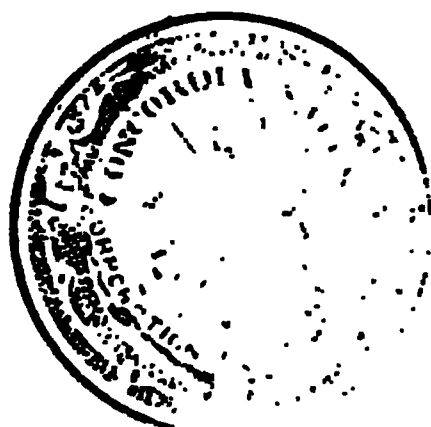


# ANNUAL REPORT

SUPERINTENDENT

## Montreal Water Works

YEAR ENDING 31st DECEMBER 1890



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# ANNUAL REPORT

OF THE

SUPERINTENDENT

OF THE

**Montreal Water Works**

FOR THE

YEAR ENDING 3<sup>rd</sup> DECEMBER 1890

*Printed by order of the Water Committee*



**Montreal :**

**EUSÈBE SENÉCAL & FILS, PRINTERS,**

**20, ST. VINCENT STREET**

**1891**





ANNUAL REPORT  
OF THE  
SUPERINTENDENT of the MONTREAL WATER WORKS  
FOR THE  
YEAR ENDING 31st DECEMBER 1890.

WATER WORKS OFFICE, CITY HALL

Montreal, February 23rd 1891

To the

*Mayor, Aldermen and Citizens, of the City of Montreal.*

GENTLEMEN,

I have the honor to report on the operations of the Water Department for the year 1890, the general condition of the works and the more important improvements contemplated in the near future. The subject is considered under the following heads, viz : 1st. Aqueduct.—2nd. Low Level Pumping Works.—3rd. Machine Shop and Brass Foundry.—4th. Tail Race.—5th. Pipe Track and Pumping Mains.—6th. Reservoirs.—7th. High Level Service.—8th. Pipe Laying.—9th. Maintenance of Distribution and service Pipes, Hydrants and Fountains.—10th. Consumption of Water.—11th. Meters and House to House Inspection.—12th. Administration.—13th. Quality of Water.—14th. General Remarks.

With an appendix, comprising reports for the year, from the Assistant Superintendent and other officers of the Department and from outside experts, together with tabular statements showing work done and money expended, and giving on various points, information which it is hoped, may be found interesting and useful.

1st. AQUEDUCT.

Two of the farm bridges crossing the aqueduct, viz : at Crawford's and at Stephen's were rebuilt. Penniston's bridge and the crib work abutments of Parker's bridge were repaired. The planking of the bridge of upper regulating gates was renewed. The

culvert under Dumberry's road North of Aqueduct, was repaired.

The bridges along the line of the aqueduct were painted. The fences were repaired where most needing it and a larger amount of ditching than usual, was cleaned. The weeds were cut.

The dwelling at the head of the aqueduct was painted, pretty thoroughly.

Two special constables were employed from early in the summer until the winter, to patrol the aqueduct grounds and prevent any disorderly persons from frequenting them.

Nothing was done to the retaining walls along the banks. They are generally in good condition and even the worst parts will probably take no further harm through the postponement of repairs.

The high spoil banks near the new entrance to the aqueduct and at the junction of the two aqueducts, are diminishing gradually, being slowly washed, on one side, into the aqueduct and on the other, into the back ditches and over the adjacent land.

At the request of the Governors of the Protestant Insane Asylum at Verdun, a pipe was put through the bank of the Aqueduct to supply the Asylum. The work was done by the Department, to be paid for by the Asylum authorities, who are also to supply a meter.

The water power furnished by the aqueduct during the year has been remarkably good, enabling the wheels to pump 3915 million gallons, or a daily average of 10.72 millions gallons, against reservoir pressure. This in spite of frequent interruptions for repairs. The best days pumping done by the wheels in 1890 (and which is also the best days pumping ever done, by water power from this aqueduct) was on April 10th when 14 1/10 million gallons were raised.

For the months of April May and June 1890 the wheels averaged over 13 1/4 million gallons per day.

## 2nd. LOW LEVEL PUMPING WORKS.

No. 1 wheel and pumps required very little expenditure the past year. This year the large bevel wheel on the countershaft must be recogged.

No. 2, the breast wheel showed such a serious crack in the rim, at the north end, that it was decided to make repairs, which have been done at a cost of about a thousand dollars. The break occurred towards the end of September and three months were occupied in repairs. The job was entrusted to Messrs. J. and R. Wier, machinists of this city, and they did it most satisfactorily. The Chief Engineer at the Pumping Station, reports the wheel good for some years service.

is in good condition. Its pumps, however, as well

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as those of the breast wheel require frequent packing and very close attention.

No. 4 wheel and pumps worked very well They require very small expenditure for repairs.

The wheel house foundations were in very great danger at one time, water from the settling basin having found its way under the wall of No 1 wheel house. The danger declared itself on 1st July, water entering all the lower portion of the buildings. Repairs were commenced immediately and the earliest opportunity was taken advantage of, to report the state of affairs to the Water Committee. It was not however until the 14th of the month that a quorum could be got together, though meetings were called for the 8th and again for the 10th. On hearing the Superintendent's report, the Committee approved of the steps he had taken and instructed him to proceed with the repairs. The work of stopping the leaks (which was done under the immediate supervision of Mr. Kearney, Chief Engineer, and whose report, to be found in appendix, recounts the whole matter in detail) was necessarily tedious and intermittent, owing to the difficulty of locating the leaks and to the inexpediency of keeping the settling basin empty for more than 36 hours at a time. M. Kearney's persevering and well directed efforts were finally successful, and the leaks were all stopped in about a month, at a cost of some \$3670, which was small, considering the magnitude of the threatened catastrophe thus averted. So far as can be judged the repairs are very thorough, the interior of the lower part of the wheel house being drier now than it has been for many years before.

Some minor repairs to the buildings this year are advisable.

Steam Engine No. 1. Worked well whenever called on, and is now in good condition. The ordinary expenditure for repairs or rather for maintenance, is all that was required last year or likely to be required this year. A second boiler feed pump, as asked for two years ago, would be a desirable addition to this plant.

The steam engine heretofore described as "No 2", which was completed in 1872 at a cost of \$33 650.00 and which pumped during its existence 1315 million gallons, was sold in September last for \$1100.00. The purchaser broke it up into scrap and carted it away. It had not pumped since, 77.

No. 3. Engine has undergone a complete overhauling and repair and is now in good condition.

Both engine houses are in a fair state of preservation.

The Leadbeater furnace and blast was put in the 3rd Heine Boiler, completing the set.

The floors of the boiler house of Nos 2 and 3 batteries were concreted and a very excellent job made of it.

The coal shed and weigh house near it require repairs. Many of the posts of the former, are out of plumb. The walls, too, have

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been shoved by the frost. They show serious cracks. The dwellings will require some small repairs.

The grounds are in fairly good condition.

For details concerning these works see Engineer's report, page 13 of appendix.

The total quantity of water, pumped by water power during the year was 3,914,923,000 gallons, with an expenditure (including heavy repairs to Breast wheel) of \$6 162.23, making \$1.57  $\frac{4}{5}$  per million gallons raised 169 feet or \$0.00  $\frac{13}{100}$  per foot high.

(Note: The expenditure stated above, is that given in schedule No. 16 in appendix, less \$3 663.47 being cost of extraordinary repairs to foundation of Wheel House, which it would seem unfair to charge to cost of pumping. If charged to that it would bring the cost per million gallons raised 1 foot high to \$0.01  $\frac{13}{100}$ .)

The total quantity pumped by steam power during the year is 1,340,972,000 gallons, the expenditure for which was \$1 8661.46 equal to \$13.91  $\frac{13}{100}$  per million gallons raised 169 feet or \$0.03  $\frac{13}{100}$  per foot high.

Schedules Nos. 1 and 2, in appendix, give in detail, the performances of the different wheels. Nos. 2 and 3 those of the steam engines, with, in each case, stores consumed, oil, coal, &c., &c. Schedule No. 5 gives a summary of pumping done by each machine, with levels of water in aqueduct.

The following table shows the cost of raising 1 million gallons one foot high, by water power and by steam power, for the last 16 years and the average cost, by each method, for the same period.

| YEAR.                    | BY WATER.     | BY STEAM. |
|--------------------------|---------------|-----------|
| 1875.....                | \$0.0200..... | \$0.119   |
| 1876.....                | 0.0140.....   | 0.144     |
| 1877.....                | 0.0158 .....  | 0.080     |
| 1878.....                | 0.0106 .....  | 0.170     |
| 1879.....                | 0.0093.....   | 0.119     |
| 1880.....                | 0.0120.....   | 0.123     |
| 1881.....                | 0.0136.....   | 0.121     |
| 1882.....                | 0.0118.....   | 0.258     |
| 1883.....                | 0.0135.....   | 0.134     |
| 1884.....                | 0.0124.....   | 0.211     |
| 1885.....                | 0.0102.....   | 0.094     |
| 1886.....                | 0.0110.....   | 0.138     |
| 1887.....                | 0.0092.....   | 0.117     |
| 1888.....                | 0.0112.....   | 0.082     |
| 1889.....                | 0.0096.....   | 0.078     |
| 1890.....                | 0.0093.....   | 0.082     |
| Average of 16 years..... | 0.0121.....   | 0.129     |

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### 3rd. MACHINE SHOP AND BRASS FOUNDRY.

The extension of the shop requires repairs. The roofs of shop and foundry need painting.

Both these places were kept busy during the summer and yet were unable to do all our work. The Water Committee has decided to put another lathe in the shop.

The following is a list of work turned out from the shop.

|      |   |  |
|------|---|--|
| 106  | New Hydrants.   |  |
| 35   | do 4" valves.   |  |
| 51   | do 6" "   |  |
| 45   | do 8" "   |  |
| 27   | do 10" "  |  |
| 49   | do 12" "  |  |
| 2    | do 4" valve glands finished.                                  |  |
| 11   | do 4" " spindles and 2 nuts.                                  |  |
| 7    | do 6" " "   |  |
| 394  | Service rods.   |  |
| 2    | Hydrant 6" brass bottom plugs 61 lbs.                         |  |
| 2    | 1" Ground cocks.  |  |
| 116  | $\frac{5}{8}$ " Pneumatic stop valves.                        |  |
| 2974 | $\frac{1}{2}$ " " " "   |  |
| 529  | $\frac{1}{2}$ " 2 way branches.                               |  |
| 278  | $\frac{1}{2}$ " 3 " "   |  |
| 197  | $\frac{1}{2}$ " 4 " "   |  |
| 2600 | Round ends.   |  |
| 2600 | Square "  | } for air tubes.                       |
| 5400 | Pointed "   |  |
| 5400 | Union couplings   |  |
| 5400 | Tube caps   |  |
| 400  | Nipples   |  |
| 8    | 1" Pneumatic stop valves.                                     |  |
| 56   | Watering nozles.  |  |
| 146  | $\frac{1}{2}$ " Nozles.                                       |  |
| 2015 | $\frac{3}{8}$ " " "   |  |
| 54   | 1" Nozles.  |  |
| 45   | $\frac{5}{8}$ x $\frac{1}{2}$ " Reducing couplings.           |  |
| 43   | $\frac{1}{2}$ " Steel nozle drills.                           |  |
| 47   | $\frac{3}{8}$ " " " "   |  |
| 1    | 1" " " drill.   |  |
| 6    | $\frac{7}{8}$ " Studs 4" long 6 $\frac{1}{4}$ lbs. H. L. Eng. |  |
| 100  | $\frac{5}{8}$ " Bolts and nuts.                               |  |
| 52   | $\frac{3}{4}$ " " " "   |  |
| 24   | 2" x $\frac{1}{2}$ " Iron bands 199 lbs.                      | } 177 lbs. } Bridges, line of Aqueduct |
| 21   | $\frac{3}{4}$ " Bolts and nuts.                               |  |
| 8    | $1\frac{1}{4}$ " " " "  |  |
| 2    | Hydrant tumblers and nuts.                                    |  |

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- 18 Hydrant brass sockets.
- 18 Wrt. Iron keys for No. 2 wheel.
- 18 " " gibs " "

### REPAIRS DONE IN MACHINE SHOP.

- 1 Ratchet brace.
- 7 Air pumps.
- 4 Footpath augers.
- 18 Hydrants.
- 566 Tools for cutting and caulking pipes.
- 1288 Pick axes.
- 31 Fire irons.

Brass Castings delivered from W. W. Foundry for  
the year..... 17 659 lbs.

### 4th. TAIL RACE.

The necessary repairs (which were slight) were done to the fences.

A child was drowned in the Tail Race and to facilitate the search for the body, the water was lowered. The body was however found in the river. The lowering of the water revealed the fact that the foundations of the bridge at the Lower Lachine Road were considerably undermined. The matter was reported to the Water Committee who ordered repairs to be done and asked Council for an appropriation to cover the cost.

The Superintendent's estimate, made in contemplation of doing the work by ordinary contract, at the most favourable season for such work, viz, the summer, is already far overrun, as became obvious would be the case, so soon as the mode of giving out the work and the season at which it was to be commenced had been decided. When the money was granted the Committee resolved to put the work in the hands of a contractor, he to furnish labour and material and to be paid prices which are to be determined on, after the completion of the work. The matter was the subject of discussion at several meetings of the Committee and the opinion of the City Atty, was asked and obtained as to whether the resolution was binding. The reply being in the affirmative, the Supt. was ordered to instruct the contractor, Mr. E. St. Louis to proceed with the work. A temporary bridge was constructed to accommodate the traffic whilst the permanent one was being demolished and rebuilt. The masonry of both abutments was taken down to about two courses of the bottom, when the water rose and covered the tops of the coffer dams around the foundations. Work had to be suspended, in fact should have been suspended earlier, so as not to leave the banks back of abutments exposed, but the contractor, apparently eager to get on with the work, continued after having been ordered to stop. Besides the temporary bridge and the taking

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down of the masonry, the excavation for a low dam (near the site of the old dam), was made, the object of this dam being to deaden the current at the bridge and so prevent a recurrence of the scour which undermined the bridge foundations. The work was necessarily suspended, until the water lowers. In the meantime the contractor is hauling stone to replace that found defective or broken in taking down the masonry.

### 5th. PIPE TRACK AND PUMPING MAINS.

The contract for a culvert, under the Grand Trunk Railway near the wheel house, is not yet closed, though the work itself was satisfactorily completed in the fall of 1889. Mr. Nicholson, the contractor, asks to be paid some \$900 extra which, so far, he has not been granted and about \$42.18 of the original contract price, remains in the hands of the Committee.

The 24 inch pumping main laid in Centre street from Atwater avenue to Napoleon Road in 1889, was last year produced to Montmorenci street, and along that street to the Lachine Canal, which was crossed by a double 24 inch main, uniting again in a single 24 inch on the north side of the Canal, and produced to the corner of Guy and William streets. St. James street between McGill and Windsor was also laid with a 24" main in anticipation of permanent paving in 1891 and this year it is proposed to join these two points, viz: St. James street at Windsor and Guy street at William, thus giving a continuous line of 24" pipe from Atwater avenue at Center street to St. Paul street at St Sulpice, via Centre, Montmorenci, Guy, St. James and St. Sulpice. This line should, with as little delay as possible, be carried eastward, at least as far as Papi-neau Road on Notre-Dame street, to which point westward from Delorimier avenue, a 24 inch main was laid last year, preparatory to permanent paving of the street by the Road Department this year.

A 20 inch pumping main (being an extension of the 20" from No. 2 Engine, High level Pumping works) was laid in McTavish street, from in front of the reservoir grounds' gate, to Pine avenue and thence westward to Peel street. This main connects at the head of McTavish street, with the 12 inch of Pine avenue running easterly, and at the head of Peel street with the same 12 inch main running westerly and with the 12" pumping main to the High Level Reservoir. All the changes of direction in the pipe, are made by easy sweeps, so as to obstruct the flow as little as possible. The positive advantage from this new main can be seen by reference to schedule No. 7, when the new main came into use which shows a reduction in the pressure on the pumps of from 15 to 20 lbs. per square inch.

The valves and valve chambers on all pumping mains were examined as usual and necessary repairs done.

## X

The old revetment wall, on the west side of Atwater avenue, between St. Antoine and Dorchester streets, was taken down and rebuilt in a thoroughly substantial manner and with a durable stone. This work exceeded the original estimate very considerably and for good reasons. In the first place, from examining the face of the old wall it appeared that a large part of it was fit to remain. When the adjacent portions were removed, however, it became clear that what looked all right from a front view, was really nearly, or quite as bad, as the rest, so that the whole had to be taken down and rebuilt. Again, just before the work of rebuilding commenced, the Water Committee proposed to grade Atwater avenue and ordered a survey for the purpose. This survey showed that there would be about 4 feet of cutting in front of the new wall, the foundations of which, in consequence, had to be lowered that much, increasing the cost proportionately. Again the nature of the material which the wall sustains, is such that it will not stand at any but a very flat slope which could not be given there, on account of buildings at the back, so that bank and buildings had to be shored up, the former being dealt with by short sections at a time. Altogether, considering the permanent nature of the work done and the difficulties encountered, the City gets good value for the money expended, some \$5 800.00.

### 6th. RESERVOIRS.

On account of a dead body having been found in the High Level Reservoir, it was cleaned early in the summer. Much inconvenience having arisen from the fact that the tile pipe drain from this reservoir burst every time an attempt was made to use it, the tile pipe was taken up and in its place a cast iron pipe of the same size, 12 inch, was put down. This pipe was taken up from Wellington street, as being unfit for a street main under pressure, but quite good enough as a drain pipe and of course costing the City nothing. It is hoped there will be no difficulty in draining this reservoir in a hurry hereafter, should circumstances call for it. A watchman has been placed at this reservoir to prevent evil disposed persons from polluting in any way the water.

The McTavish street reservoir was emptied and cleaned. It had not been cleaned for many years before and yet the amount of deposit was inconsiderable.

The bottoms of both of these reservoirs, the high and low, have never been graded, they are consequently very difficult and expensive to clean. The cost of grading them, by taking down the high points and filling up the depressions with concrete, finishing with a thin smooth coat, the whole having a fall towards the outlet, would be large, perhaps the interest on the cost would



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equal or exceed the annual cost of cleaning them as they are now, but the time taken to clean the McTavish street one is an important factor in the question. It is not expedient to keep this reservoir empty long and in the present rough condition of the bottom, it would take more men to clean it quickly than can be put into it. If graded as suggested above, it could be washed out every year, in a very short time, with a very few men.

An attempt was made to repair (that is to make water tight) the old portion of the division wall of McTavish Reservoir. Though not completely successful, enough was accomplished to warrant the hope that by continuing the work this year on the same system, the deed may be done. The work was discontinued last fall because the money gave out and besides residents along the upper limits of the low level district, were naturally impatient at the frequent lowering of the water in the reservoir, affecting as it does their supply.

The leaks in the main walls on south side of McTavish reservoir, no longer exist, so far as can be ascertained.

See the report of the Guardian of the Reservoirs, page 20 of appendix, for further information in detail, as to the condition of the property in his charge.

### 7th. HIGH LEVEL PUMPING STATION.

The buildings are in pretty fair condition with the exception of the coal shed, the roof of which leaks. This and a few other repairs of a minor nature will be attended to this year. An ash-pit was built outside of the boiler house.

Both engines are in good working order. No. 1 did very little work, having pumped only about  $1\frac{1}{2}$  million gallons in the year, at certain times when No 2 was under going repairs and when the High Level Reservoir was being cleaned.

No 2 underwent some trifling repairs, the first necessitated by the slipping of the high pressure cylinder jacket, the second from some of the tubes in the surface condenser becoming slightly displaced.

The Water Committee, in the month of October last, entered into contract with Mr. William C. White, boiler maker of this city to furnish a boiler similar in type to, but somewhat larger than, that now in use at these works, for the sum of \$3 950.00. The time of completion was fixed at 15th January 1891 but as some of the steel plates had to be imported, there was a tacit understanding that a reasonable extension of time would be allowed. The work is well advanced and there is a fair prospect of having the boiler in use at an early day.

The consumption of water on the High Level district, increases year by year and out of proportion to the extent of the limits

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of the district. The increase of 1889 over 1888 was 54%, that of 1890 over 1889 is 47%. A remarkable feature in the pumping, is that whereas, it was as stated 47% more than in 1889, the quantity of coal used shows an increase of  $67\frac{1}{2}\%$  over that of 1889 and this in spite of the fact given under heading "Pipe Track and Pumping Mains" that in consequence of the laying of a 30 inch pumping main from the engine to Peel street, the pressure on the pumps was reduced to 160 lbs. having, before said main came into use, stood at 115 to 120. The new pumping main was first used in June and a reference to schedule No 7 shows the immediate and marked reduction in the quantity of coal required to raise 1 000 000 gallons viz: the average for the months before June was 4304 lbs. and for those after June 3737 lbs. but even this latter is larger than for 1889, which was 3567 lbs. These figures refer to No 2 Engine (the Gilbert) alone, as the work of No 1, both years, was too insignificant to be included in the comparison. The Leadbeater bars and steam blast came into use in October 1889 and it is noteworthy that the increase in consumption of coal per million gallons pumped, commenced at that same time. This on the face of it, would appear to indicate that the Leadbeater device is to blame. Yet it is perhaps better to reserve judgment until further investigation and trial shall shew more clearly where the difficulty lies. The coal used was partly American and partly Welsh Anthracite, in about the same proportions as in former years.

Schedules 6 and 7 in the appendix show the total number of gallons pumped to have been 185 891 000 with an expenditure (as taken from schedule No 16) of \$5 343.70, equal to \$28.74 $\frac{1}{10}$  per million of gallons pumped or \$0.13 $\frac{1}{2}$  per million raised one foot.

The cost of raising 1 million gallons 1 foot high was:

|                          |         |
|--------------------------|---------|
| In 1876.....             | \$0.240 |
| " 1877.....              | 0.253   |
| " 1878.....              | 0.355   |
| " 1879.....              | 0.283   |
| " 1880.....              | 3.274   |
| " 1881.....              | 0.226   |
| " 1882.....              | 0.256   |
| " 1883.....              | 0.286   |
| " 1884.....              | 0.318   |
| " 1885.....              | 0.376   |
| " 1886.....              | 0.250   |
| " 1887.....              | 0.187   |
| " 1888.....              | 0.197   |
| " 1889.....              | 0.121   |
| " 1890.....              | 0.135   |
| Average of 15 years..... | 0.250   |

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For further details in reference to these works see report (page 20 of appendix) from Mr. Jas. Coleman, Engineer.

#### 8th. PIPE LAYING.

The total length of cast iron pipe laid in the city during the year 1890 is 91199 feet or  $17\frac{1}{4}$  miles, the weight of metal being 4500 tons of 2 240 lbs. each. The different sizes of pipes laid, their lengths and weights, and the number of valves of different sizes put in are as follows:

|                    | FEET.  | TONS.      | VALVES     |
|--------------------|--------|------------|------------|
| 30 inch Pipes      | 5      | 1          | 1          |
| 24 " "             | 9 609  | 1 201      | 10         |
| 20 " "             | 5 441  | 522        | 3          |
| 16 " "             | 358    | 25         | 4          |
| 12 " "             | 40 130 | 1 846      | 80         |
| 10 " "             | 8 011  | 264        | 36         |
| 8 " "              | 18 157 | 497        | 77         |
| 6 " "              | 7 407  | 136        | 42         |
| 4 " "              | 2 081  | 25         | 62         |
| <hr/>              |        |            |            |
| Total, lineal feet | 91199  | 4 517 tons | 315 valves |
| <hr/>              |        |            |            |

New hydrants put in, 200.

Service pipes to houses, 2 826.

Allowing for old pipes and valves taken out or abandoned in the ground and for hydrants taken out, the total quantity of main pipe in use in the City to December 31, 1890 is 939 661 feet or 178 miles. Valves to same date 1 790. Hydrants; public 1 352, private 58, all told 1 410. Services to houses 40 403.

Schedule No. 12 in appendix shows the different wards and streets in which pipe laying was done, with the quantities done, for the year 1890.

Schedule No. 13, shows the total lengths of pipe of the different sizes, numbers of valves, hydrants, services etc., actually in use in the different wards of the City, at the end of the year 1890.

Certain portions of the pipe laying presented unforeseen difficulties, notably the 24 inch main of Centre street, where, owing to the fact that the sewer occupies the level properly belonging to the water pipe, the latter had to be put at an excessive depth, to avoid the cross sewers and house drains, so that the pipe cut was, for a considerable distance, subject to inundation from the river through the sewer. Thus the cost was directly augmented in two ways, viz. by increased excavation and by almost daily pumping, besides the fact that after the pipe had been laid and the cut filled, (the work having been done in winter) the flood water found its way along the pipe and caused the cut to sink in many places, so

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that in the Spring, very considerable repairs to the street surface were needed.

There were other parts of the work unusually difficult, but the most serious drawbacks were caused by commencing the summer's work late and without adequate provision of pipes and special castings. This was partly in consequence of the council having deferred voting the money asked until the working season was far advanced, and partly due to contracts unfulfilled; the fact being that the Department worked under heavy disadvantages all through.

A large portion of the pipe laying undertaken was with the view to preparing certain streets to receive permanent paving in 1891. That part of the work was very nearly completed; what remains of it can be done early enough this Spring, not to interfere with the operations of the Road Department.

Some pipe laying in St. Jean Baptiste ward, was also left over. Even had there been time and pipes for it, it could not have been done, because in this ward, the pipes must be laid in the sewer cut, and the sewers have not been built in the streets referred to. Altogether about  $6\frac{1}{8}$  miles of the work estimated for has been left over, whilst nearly 3 miles of work unforeseen, but which was peremptorily called for, was done. The pipes for the uncompleted lines are provided and all is prepared for a prompt resumption of the work when the frost leaves the ground.

### 9th. MAINTENANCE OF DISTRIBUTION PIPES, SERVICE PIPES, HYDRANTS AND PUBLIC FOUNTAINS.

The report of Mr. Chs. Lagacé, Foreman, together with schedules Nos. 9, 9a and 15 give full details of work under the above heading. Said report and tables may be found in appendix.

The most serious break was on the 24 inch main of Centre street, when a piece about 8' x 1' was blown out of a pipe. This happened about 3 o'clock in the morning of June 12th. The water was shut off in a surprisingly short time considering the locality and the hour, but yet a great number of cellars in the vicinity were flooded and some damage was done to grocery stocks, etc., fortunately buildings were uninjured. The number of main pipes burst in 1890 was 23, no increase over the number of breaks of the year before. The leaks from joints blown out, are much fewer, valves renewed are also fewer. The old 12" main pipe of McCord street (probably the worst water main the City had), has been taken out and a new 12 inch main laid in its place.

A large number of hydrant valves had to be renewed, due in a great measure to injuries from rough usage. It is very difficult to prevent lawless people from making free with these hydrants. Constant watchfulness is necessary. The number of hydrants reported frozen was very large. A fruitful cause of leaks to both service

pipes and mains is the crossing under them of cuts for sewers. In spite of all the care that may be taken to protect the water pipes, the settling of the newly filled earth from under them with the weight of filling above, breaks a great many.

There were 3 new drinking troughs put up, viz, at the corner of Ottawa and Dalhousie streets, St-Catherine street, near Atwater Avenue, and at Papineau Road north of Sherbrooke street. The positions of two others were changed. One additional drinking tap was added. The centre fountain of St. Louis Square Basin was raised and four jets placed near the corners, effecting a marked improvement.

See schedule No. 16 for expenditure under each of the above named heads.

#### 10th. CONSUMPTION OF WATER.

The quantity of water pumped during the year is 5 255 895 000 gallons, or a daily average of 14 399 800 gallons, an increase of over  $1\frac{1}{2}$  million on the daily supply for 89, but less than a million increase on that of 88.  $74\frac{1}{2}$  per cent of all the water used was pumped by water power, the remaining  $25\frac{1}{2}$  % by steam. That is the water power pumping, averaged nearly  $10\frac{3}{4}$  million gallons daily and the steam  $3\frac{3}{4}$  millions.

Tableau No. 10 shows the average daily consumption for each month and for each year, from 1857 to and including 1890. The yearly variation in consumption, shown by this table, is very irregular and hardly affords a foundation upon which to base a conjecture as to the demand for the next few years, but yet beginning with 1860 and taking by decades, each succeeding one compared with its predecessor shows an increase averaging 67 per c. at which rate, we might look to be using about 23 million gallons daily, at the beginning of the 20th century.— This however may be largely exceeded, it being a generally recognized fact, that the per capita consumption in cities, increases with the population. Montreal however in the last decade, has not conformed to this general rule. the figures being as follows:

| YEARS. | * POPULATION. | GALLONS PER DAY. | GALLONS PER CAPITA. |
|--------|---------------|------------------|---------------------|
| 1860   | 90,000        | 3,159,000        | 35                  |
| 1870   | 107,000       | 6,433,000        | 60                  |
| 1880   | 143,000       | 9,607,000        | 67                  |
| 1890   | 234,000       | 14,400,000       | 61                  |

The city works furnish water, by meter, to five outlying municipalities, viz : Cote St. Antoine, St. Louis du Mile End, St. Louis, Cote de la Visitation and Maisonneuve.

The report of the Assistant Superintendent at page 2 of appendix shows to what purposes the water pumped is applied.

• N. B. This includes, population supplied in outside municipalities

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### 11th. METERS AND HOUSE TO HOUSE INSPECTION.

The number of meters in use at the end of the year was 693. Of these 634 are the property of the city and 59 belong to the persons whose water supply they measure. The total quantity of water supplied by meter is 606.7 million gallons. The expenditure under the head "Meters" was \$10,869 (as may be seen by reference to schedule No. 16). This includes wages, repairs and new meters, but not the salary of the chief Inspector, who has charge of the books and directs the subordinate inspectors of both classes and whose salary is charged under the head "Staff".

The house to house inspection has been continued, the same number of men being employed as in '89, viz : five. The waste detected and stopped has been very considerable. A reference to schedules Nos. 11 and 11A and to the report of the Assistant Superintendent, in appendix, will afford all information, in detail, as to the work done during the year, in the two branches of the water department above named.

### 12th. ADMINISTRATION.

Schedule No. 16 gives the details of the year's expenditure as well for maintenance as for permanent improvements. The former amounts in total to \$121,186.34, this is paid out of revenue. The latter \$569,327.53 is taken from loans and is principally for pipe laying.

Schedule 18, shows the total cost of each of the different lines of pipe laid, including the hydrants, valves and cross street connections. Schedule No. 19 gives the cost of service pipes to houses.

The following statement showing the average amount of the weekly pay lists for six years back, will convey some idea of the increase of the work of the Department under the above heading.

Average weekly pay list for the years :

|           |            |
|-----------|------------|
| 1885..... | \$1 099.35 |
| 1886..... | 1 763.07   |
| 1887..... | 1 615.52   |
| 1888..... | 2 214.25   |
| 1889..... | 2 826.62   |
| 1890..... | 4 177.72   |

The number of office employees has also increased somewhat, but not by any means in proportion. One clerk was added in the Superintendent's office and an assistant to the accountant is now required.

## XVII

### 13th. QUALITY OF WATER.

This subject has been freely discussed during the past year

In January your Council passed a resolution calling the attention of the Dominion Government to the pollution of the Ottawa River by sawdust and pointing out the danger to the water supply of Montreal from this cause. The Government in reply caused analyses of samples of the Ottawa water from various points between Ottawa City and Montreal to be made, the results of which were given to the public by a bulletin (No. 15) from the Inland Revenue Department. A reprint of said bulletin will be found at page 35 of appendix.

Your council having also referred the question of the (so called) pollution of the Ottawa River by saw-dust deposits, to the Water Committee, that committee instructed the Superintendent of Water Works to report as to whether the water supply of Montreal is affected by said deposits. But as the Superintendent had not at his disposal, the means of acquiring the necessary data on which to base the desired report, he recommended the Committee to ask your Council for an appropriation to defray the cost of a series of chemical and biological analyses of the City's water to be made monthly, for at least a year. This suggestion was acted on and the Committee even went further, having ordered examinations of samples from the St. Cunegonde and St. Henri supply and from the St. Lawrence at such a distance south from Nun's Island as to ensure getting St. Lawrence water without any admixture of the Ottawa, these with a view of instituting a comparison between them and the City's supply. However it was quite late in the year before the matter was definitely arranged and put into working order. Up to date only two reports have been received, viz, those of Doctor Ruttan and Doctor Johnston, dated respectively 13th and 15th Oct. last. These reports will be found in the appendix. They are printed herewith, more to have them on record in the order of their dates, than with a view to drawing conclusions from them, it being decidedly hazardous to form an opinion as to the quality of a potable water, from the result of a single analysis. With a water such as ours (subject to frequent change of condition) nothing short of a periodic examination, extending over at least twelve months, will enable an expert to pronounce authoritatively on the question.—It may not however be inopportune now, to remind the citizens, that the present source, is the same from which the City has derived its water supply for the past 35 years and that during that time no sickness, epidemic or endemic, has ever been found to have originated from the use of City water, but on the contrary investigation would probably show, that here as in most places, disease flourishes most, in localities where water is used least.



## XVIII

### 14th. GENERAL REMARKS.

The Water Committee decided in June last that no distribution main of a smaller size than 8 inches diam. should in future be laid in the City. This resolution, if erroneous at all, certainly errs on the side of safety. Montreal is not the only city that is finding out, perhaps a little late in the day, that the economy in laying small mains, is, to put it mildly, a doubtful one.

The policy which the Water Department has pursued for some years, viz: to perfect, as far as possible the pipe system, as a means of fire protection, is bearing good fruit, as is indicated by the fact, that complaints of scarcity of water at fires, are of the past.

The average pressure also, taken by guage at the different fire stations, and recorded in schedule 14 in appendix, compares favourably with average pressure of former years, showing the pressure generally to be more constant and not so easily affected by intermittent draught.

There will be a good deal of pipe laying to be done this year. The principal item of which is the extension of the 24 inch main already mentioned under heading "Pipe Track and Pumping mains." The rest will be for new streets opening up, or streets about to be permanently paved, in which the existing main is either too small or otherwise not in satisfactory condition to be left for many years. And other streets where from either of the foregoing causes the mains require immediate renewal. Also an endeavour will be made to eliminate many of the dead ends now existing and which require much attention and frequent sludging, to keep the water in them fresh and wholesome.

As stated in an earlier part of this report, the expenditure, both for maintenance and permanent improvements, increases year by year. This is only a natural consequence of the city's growth and, as regards maintenance, may be expected to continue. *Per contra*, the number of service pipes put in annually (about 3000) points, *cæteris paribus*, to a compensating increase of revenue.

A marked feature of the past year, as regards Montreal Water Works affairs, is the agitation for lower water rates, or at all events lower rates for the poorer classes of the community. A special sub committee of the Council has this matter under consideration and may be expected to report at an early day.

I have the honor to be

Gentlemen,

Your obedient servant,

B. D. McCONNELL,

*Supt. M. W. W.*



# APPENDIX

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**REPORT of J. O. ALFRED LAFOREST, Assistant-Superintendent of Water Works, on Meters and House-service inspection, for the year 1890.**

MONTRÉAL, 1st March 1891.

B. D. McCONNELL, Esq.,

Supt., M. W. W.

with beg to submit, for your information, the following report upon the Meter and House-service inspection branches of the Water Department for the year 1890.

**METERS.**

The number of meters in use, at the end of the year, was 593, being an increase of 23 over 1889. The city owns 534; the other 59 belong to private individuals or companies.

There were 95 new places metered and 60 meters in use were continued.

There were 111 changes of meters made for various reasons, some being out of order and others too small.

The number of meters damaged by frost was 12, one belonging to a private party.

In all these cases the damages were charged to the tenants as there is a by-law holding them responsible for all damages to the instruments on their premises.

The Department purchased during the year 111 new meters. viz :—

|            |    |    |        |
|------------|----|----|--------|
| 64 CROWN : | 1  | 6  | inches |
|            | 2  | 4  | do     |
|            | 9  | 3  | do     |
|            | 2  | 2  | do     |
|            | 2  | 1½ | do     |
|            | 12 | 1  | do     |
|            | 36 | 0½ | do     |

|             |    |   |        |
|-------------|----|---|--------|
| 41 EMPIRE : | 2  | 2 | inches |
|             | 14 | 1 | do     |
|             | 25 | ½ | do     |

|         |   |   |        |
|---------|---|---|--------|
| 6 GEM : | 6 | 3 | inches |
|---------|---|---|--------|

Total..... 111

There were also 3 Crown meters purchased by private parties.

|   |    |        |
|---|----|--------|
| 1 | 6  | inches |
| 1 | 4  | do     |
| 1 | 1½ | do     |

During the years 1889 and 1890, we destroyed 81 ½ inch and 9 1 inch old Union meters that were completely worn out.

The same meters as before (11) were used this year at the harbour latrines and drinking fountains.

There were also the same 5 meters at the Low Level Pumping Works.

The water sold by meter last year and the previous year was as follows:

|   | 1890<br>Millions of<br>Gallons. | 1889<br>Millions of<br>Gallon . |
|---|---------------------------------|---------------------------------|
| <i>266931</i><br><i>658</i>   |                                 |                                 |
| Railways, including Street Railway .....  | 164.73                          | 153.62                          |
| Factories and Engines.....  | 126.80                          | 121.82                          |
| Elevators, etc., exclusive of those at Railways and Hotels.....                             | 139.60                          | 115.62                          |
| Breweries .....   | 30.14                           | 23.10                           |
| Hotels .....  | 39.23                           | 36.53                           |
| Schools, Convents and Colleges .....  | 26.76                           | 18.39                           |
| Hospitals and Homes.....  | 9.74                            | 7.89                            |
| Church Organs.....  | 5.14                            | 3.81                            |
| Miscellaneous (Photographers, Livery Stables, Skating Rinks, Restaurants, Dyers, etc.)..... | 30.09                           | 14.45                           |
| Outside City limits.....  | 34.43                           | 20.82                           |
| Totals.....   | 606.66                          | 516.12                          |

Showing an increase of 17 p. c. over 1889.

The following is a list of meters in use from 1876 to 1890.

| Years. | Property of<br>W. W. De t. | Property of<br>Private parties. | Total. |
|--------|----------------------------|---------------------------------|--------|
| 1876   | 279                        | 68                              | 347    |
| 1877   | 294                        | 74                              | 368    |
| 1878   | 239                        | 73                              | 312    |
| 1879   | 227                        | 70                              | 297    |
| 1880   | 236                        | 69                              | 305    |
| 1881   | 266                        | 65                              | 331    |
| 1882   | 307                        | 63                              | 370    |
| 1883   | 380                        | 46                              | 426    |
| 1884   | 421                        | 47                              | 468    |
| 1885   | 467                        | 41                              | 508    |
| 1886   | 508                        | 36                              | 544    |
| 1887   | 542                        | 47                              | 589    |
| 1888   | 562                        | 54                              | 616    |
| 1889   | 610                        | 60                              | 670    |
| 1890   | 634                        | 59                              | 693    |

There were some meters in use previous to the year 1876, but there was no regular account kept of them.

The schedule No. 11a will give an alphabetical list of the meter tenants, the street, description of establishment, the size, kind and number of the meter, etc.

The schedule No. 11 will also give the number of meters in use and those at the shop, for each year since 1876.

### HOUSE SERVICE INSPECTION.

This inspection has been kept up throughout the year by 5 inspectors, the same number as last year.

By the 1st of April 1890, we started a new system of inspection, giving each inspector a book with printed forms.

In this book he has to register the name of the street he is working on, the number of the house inspected, the name of parties occupying the building, the kind of building, the general condition and size of service pipe, the number and sizes of faucets, the number of sinks, water closets, urinals, fountains, hydrants, water engines, etc.

If any leaks found, he has to state in the column of remarks what kind of fixtures were leaking, and number of gallons wasted per

hour by the same. He also verbally notifies the tenant to have it repaired. A few days after, he goes back to the same place to see if it is repaired; if not, the case is brought to the Recorder's Court and the inspector of that district has got to pass all the morning there to wait for his turn, and if several cases occurred in the same morning, we may have all our inspectors there doing nothing.

It is easy to see to what conclusion I want to come.

If we had a good steady man (a good plumber) that could talk and write both French and English, to be outside chief inspector of water, he could take the charge of those prosecutions, do the specials and have a general supervision over the inspectors who, at present, are absolutely left to themselves.

Besides this, the inspectors, instead of taking all saturday to re-visit the leaking places and report, would keep steadily on their work and have no reason whatever to be met outside of their districts during the working hours.

The new system adopted last year, although being very efficient, as the following tableau of the quantity of water wasted found by our inspectors will show, would not be complete before we have that chief inspector, whose nomination I hope you will favour.

The result of this inspection with the same number of inspectors as last year (5) was the discovery and stoppage of waste from defective fittings as enumerated below, viz. :

|                          | 1889.        | Gall.<br>per<br>hour. | 1890.        | Gall.<br>per<br>hour. |
|--------------------------|--------------|-----------------------|--------------|-----------------------|
| Bib cocks out of repair. | 2812 wasting | 29666                 | 3763 wasting | 42485                 |
| Urinal do do             | 80 do        | 1346                  | 82 do        | 1561                  |
| Ball do do               | 1412 do      | 22492                 | 2006 do      | 37614                 |
| Stop do do               | 72 do        | 1405                  | 54 do        | 817                   |
| Closet do do             | 222 do       | 4361                  | 191 do       | 5238                  |
| Basin do do              | 168 do       | 1820                  | 263 do       | 3357                  |
| Closet valves do         | 137 do       | 3426                  | 126 do       | 2860                  |
| Water closet do          | 68 do        | 2450                  | 36 do        | 1143                  |
| Pipe burst               | 907 do       | 11041                 | 741 do       | 12966                 |
| Other defective fittings | 12 do        | 345                   | .....        | .....                 |
|                          | 5890         | 78352                 | 7262         | 108041                |

The increase of 1890 over 1889 is 38 p. c. As the inspectors did not have time to go all over the city during the year, the leaks here enumerated are only a small fraction of what is really wasted.

The following irregularities were also found :

|   |       |         |      |       |     |       |
|---|-------|---------|------|-------|-----|-------|
| Taps opened to prevent freezing.                  | 38,   | wasting | 1626 | galls | per | hour. |
| Do flush drains.....                              | 32,   | do      | 1745 | do    | do  |       |
| Using water illegally for building purposes ..... | 79    |         |      |       |     |       |
| Using water illegally for Manuf..                 | 20    |         |      |       |     |       |
| Do do do Hand hose                                | 95    |         |      |       |     |       |
|   | <hr/> |         |      |       |     |       |
|   | 264   | do      | 3371 | do    | do  |       |

There were 550 sounds heard on service pipes. In all cases the reports were made to the shop and repaired by the department if the leak was on the street.

Every case of illegal use of water was arrested as soon as discovered.

The number of prosecutions in the Recorder's court was only 58 against 107 last year.

The number of houses inspected was 51,120.

I think the house-service inspection does not receive the consideration that it should, for the good reason that we never tried or rather that we never had any means to find whether it would be advantageous to the department to let the wastes follow their course or have a good battalion of steady men to fight them.

But now that we have all the references we want from the note of last year's inspection which has been done with much care, I will try to prove with figures the saving we are entitled to by making a more minute and more frequent examination of the inside fittings all over the city.

During the last year (1890) our inspection reported 7262 leaks from fittings wasting 108,041 gallons per hour, and 70 cases of negligence on the part of the tenants wasting 3371 galls. per hour doing in all 111,412 galls. per hour.

The average of waste per hour reported was—

$$111,412 \div 300 = 371 \text{ galls.}$$

The daily average of waste is  $371 \times 24 = 8904$  galls.

As it took 16 months or 480 days for our present staff of inspectors to go over the city, the waste for the whole year is 1,159,980.-800 galls. The total consumption for 1890 was 5,255,894,761, so that the waste from the inside fittings is 30 % of the whole consumption.

Now we cannot say that if we could stop that waste we would reduce the expenses 30%, because whatever quantity of water we pump, the staff has to be paid all the same, but we could reduce the expenses on oil and on coal.

The following is the cost of the oil and coal used for pumping 1 million gallons of water.

**LOW LEVEL STATION:—**

Water pumped by water power:

Oil, \$0.10 per million gallons.

Water pumped by steam:

Oil, \$0.25 do do

Coal, 6.40 do do

Total..... \$6.65 do do

**HIGH LEVEL STATION:—**

Water pumped by steam:

Oil, \$0.77 do do

Coal, 11.33 do do

Total ..... \$12.10 do do

The water furnished by the High Level Service cost much more than that furnished by the Low Level, the water being pumped twice, so that the inspection should be carried out with more care in this district; and another reason is that the pressure being generally much higher there, the inside fittings are more occasioned to leak.

Water delivered by Low Level service (5,255,894,761—185,891,034) = 5,070,003 727. = 96 p. c.

Water delivered by High Level Service.

185,891,034 galls = 4 p. c.

So if we suppose the waste to be in proportion with the quantity of water pumped in the two different services we will have:

Water wasted in:

Low Level service...1,497,581,568 galls.

for the whole year.

High Level service. 62,399,232 do

Total..... 1,559,980,800

In using the preceeding figures of the report, we come to the following results :

**WATER WASTED, LOW LEVEL:**

1,497,581,568 galls. @ \$6.65 per million galls. = \$9958.37

**WATER WASTED, HIGH LEVEL:**

62,399,232 galls. @ (\$6.65 + \$12.10) \$18.75  
per million galls..... = \$1170.00

\$11,128.37

The expenses for the (5) inspectors, during the year,  
was ..... \$3,362.75

The quantity of water wasted during the year (1,559,980,800 galls.) exceeds the quantity of water pumped by steam (1,340,972,002 galls.) by 219,008,798 galls.

**COMPARISON OF METER RATES WITH RATES BASED  
ON ASSESSED RENTAL.**

Gallons.

The total quantity of water pumped in 1890, is..... 5,255,894,761

That bringing no direct revenue was:

|                                  |            |                    |
|----------------------------------|------------|--------------------|
| Flooding private rinks, etc..... | 1,952,480  |                    |
| Fires.....                       | 6,959,852  |                    |
| Watering streets .....           | 42,984,000 |                    |
| Public fountains .....           | 35,804,160 |                    |
| Harbour .....                    | 13,905,704 |                    |
| Steps of Turbines.....           | 14,604,112 |                    |
| Total.....                       |            | <u>116,210,308</u> |

Balance producing Revenue..... 5,139,684,453

That charged for at meter rates:

|  |             |                    |
|--|-------------|--------------------|
| Railways (including Street Railway)...                                       | 164,732,127 |                    |
| Factories and Engines .....  | 126,803,683 |                    |
| Elevators (exclusive of those at Hotels<br>and Railways .....                | 139,606,839 |                    |
| Breweries .....  | 30,146,469  |                    |
| Hotels .....   | 39,237,198  |                    |
| Schools, Convents and Colleges .....   | 26,769,140  |                    |
| Hospitals and Homes .....  | 9,741,155   |                    |
| Churches, for Organs .....   | 5,142,426   |                    |
| Miscellaneous, Livery Stables, Skating<br>Rinks, Restaurants, Dyers, &c..... | 30,092,382  |                    |
| Outside City Limits .....  | 34,437,332  |                    |
| Total.....   |             | <u>606,708,751</u> |



Gallons.

Balance being that charged for at rates based on  
rental and special rates and including waste . 4,532,975,702

The revenue from water in 1890, was:

That from metered water, including rent  
of meters, was .....\$125,523 58

Balance being revenue from rates  
based on rental and sundry special  
charges .....\$619,683 65

Total water from which revenue is derived.....5,139,684,453

Revenue from same.....\$745,207 2.3

The number of prosecutions for violation of the by-law relating  
to the meters was 3.

The monthly inspection and reading of all meters in use, has  
been kept up as usual.

Your obedient servant,

J. O. ALFRED LAFOREST,

CIVIL ENGINEER.

Assistant-Superintendent,

M. W. W.

## SUMMARY OF STATISTICS

## REPORT OF 1890

IN ACCORDANCE WITH THE RECOMMENDATION OF THE NEW  
ENGLAND WATER WORKS ASSOCIATION.

## MONTREAL WATER WORKS.

Montreal, county of Hochelaga, Province of Quebec, Canada;  
supplies also the municipalities of Maisonneuve, Côte St. Antoine,  
Côte St. Louis, St. Louis du Mile-End and Côte de la Visitation.

## POPULATION.

|                             |         |
|-----------------------------|---------|
| Montreal, 1890 .....        | 233,000 |
| Maisonneuve .....           | 1,762   |
| Côte St. Antoine.....       | 2,321   |
| Côte St. Louis .....        | 4,000   |
| St. Louis du Mile-End ..... | 3,510   |
| Côte de la Visitation.....  | 869     |
| Total.....                  | 245,462 |

## DATES OF CONSTRUCTION.

## LOW LEVEL SERVICE—

|  |   |      |
|--|---|------|
| Aqueduct.....                                      | } | 1856 |
| 2 Breast Wheels, with six pumps .....              |   |      |
| Capacity 4 million gallons per diem.               | } | 1865 |
| 1st 24 inch Rising main .....                      |   |      |
| McTavish Street Reservoir, 15 million gallons..... | } | 1865 |
| 1 Turbine wheel with two pumps.....                |   |      |
| Capacity 4 million gallons per diem.               | } | 1867 |
| 2nd 24 inch Rising main .....                      |   |      |
| Bartley Steam Engine, 3 million gallons .....      | } | 1869 |
| Gilbert do do .....                                |   |      |
| Tail Race lowered .....                            | } | 1872 |
| Turbine substituted for Breast Wheel .....         |   |      |
| Worthington Steam Engine, 8 million gallons.....   | } | 1874 |
| 1st 30 inch Rising main .....                      |   |      |
| New Entrance to Aqueduct opened.....               |   | 1875 |
|  |   | 1877 |

|  |      |
|--|------|
| Extension of McTavish Reservoir, bringing its capacity to 35 million gallons ..... | 1878 |
| Turbine Wheel 2 pumps, 2½ million gallons.....                                     | 1881 |
| Bartley Engine removed .....   | 1885 |
| Worthington Steam Engine, 10 million gallons....                                   | 1886 |
| Gilbert Engine removed.....  | 1890 |

**HIGH LEVEL SERVICE —**

|   |        |
|---|--------|
| Peel Street Reservoir, Capacity 1½ million gallons. | } 1875 |
| Worthington Steam Eng do ½ do per diem.             |        |
| 1—12 inch Rising main .....                         |        |
| Gilbert's Steam Eng., Capacity 3 million per diem.  | 1889   |
| 1—20 inch Rising main.....                          | 1890   |
| Gilbert Engine Removal.....                         | 1890   |

**BY WHOM OWNED.**—City of Montreal.

**SOURCE OF SUPPLY.**—River St. Lawrence.

**MODE OF SUPPLY.**—Open Aqueduct 5 miles in length.

74.50 per cent. pumped by water power.

25.50 do do steam do

**PUMPING.****1. Builders of Pumping Machinery—**

**Water Wheels.**—Win. Fairbairn & Son, Manchester, England.

John McDougall, Montreal.

W. P. Bartley & Co., do.

R. D. Wood & Co., Philadelphia, Pa.

**Steam Engines.**—W. P. Bartley & Co, Montreal.

E. E. Gilbert, do

Henry R. Worthington, New York.

**DESCRIPTION OF COAL USED.**

|   | Low Level service.        | High Level service. |
|---|---------------------------|---------------------|
| Kind.....   | Bituminous                | Anthracite.         |
| Size.....   | Broken.                   | Broken and Stove    |
| Brand.....  | Scotch and International. | Welsh and American. |
| Price per gros ton \$4.87....                             | \$3.65                    | \$6.00      \$6.45  |
| Per centage of ash .....                                  | 5                         | 10                  |
| 5. Coal consumed for year, lbs.                           | 5,116,430                 | 764,910             |
| 6. Total pumped by steam, galls                           | 1,340,972,002             | 185,891,034         |
| 7. Average static head in feet,                           | 169                       | 230                 |
| 8. do dynamic do  | 175                       | 251                 |
| 9. Gallons pumped by lb. of coal                          | 262                       | 243                 |
| 10. Duty, ft. lbs. per 100 lbs. coal                      |                           |                     |
| (no deductions) .....                                     | 45,875,757                | 60,998,875          |
| 6. Total pumped by water power for year, in gallons . . . | 3,914,922,759             |                     |
| 7. Average static head, in feet.                          | 189                       |                     |
| 8. do dynamic do  | 175                       |                     |

## COST OF PUMPING FIGURED ON PUMPING STATION EXPENSES.

|   | Low Level Service.    |                       | High Level Service. |
|---|-----------------------|-----------------------|---------------------|
|   | By Water.             | By Steam.             | By Steam.           |
| Viz.:   | \$6169.23             | \$18661.46            | \$5343              |
| 11. Cost per million gallons raised against dynamic head..... | \$1.57                | \$13.92               | \$28                |
| 12. Cost per million gallons raised 1 foot (dynamic).....     | \$0.00 <sup>1/2</sup> | \$0.07 <sup>1/2</sup> | \$0.11              |

### CONSUMPTION.

|   |             |
|---|-------------|
| 1. Estimated total population at date and outside municipalities furnished..... | 2,454       |
| 2. Estimated total population supplied.....                                     | 3,372       |
| 3. Total number of gallons consumed.....gallons                                 | 5,255,894.7 |
| 4. Passed through meters, domestic.....do                                       | 449,758.8   |
| 5. do manufacturing.....do  | 156,950.1   |
| 6. Average daily consumption.....do   | 14,399.7    |
| 7. Gallons per day to each inhabitant.....                                      | 59          |
| 8. do do consumer.....  | 61          |

### DISTRIBUTION.

|  |            |                   |
|--|------------|-------------------|
| 1. Kind of pipe used.....  | Cast iron. | Wrot. iron & lead |
| 2. Sizes.....  | 3" to 30"  | 2 1/2 and under   |
| 3. Estimated feet.....   | 91451      |                   |
| 4. Discontinued, feet.....   | 25045      |                   |
| 5. Total now in use, miles.....  | 178        | 2                 |
| 6. Hydrants added in 1890.....   | 200        |                   |
| 7. do now in use.....  | 1356       |                   |
| 8. Stop cocks added.....   | 315        |                   |
| 9. do now in use.....  | 1790       |                   |
| 10. Average pressure on mains day and night at Fire Station No. 2, St. Gabriel Street..... | 69         |                   |

### SERVICES.

|   |                     |
|---|---------------------|
| 17. Sizes.....                                    | Lead and wrot. iron |
| 18. Estimated feet.....                           | From 2 1/2" to 10"  |
| 19. Service pipes added (new houses supplied).... | 51785               |
| 20. Total now in use (houses supplied).....       | 2826                |
| 21. Average length of service pipe.....           | 40403               |
| 22. do cost of do do.....                         | 18 ft.              |
| 23. Motors added.....                             | \$12.25 1/2         |
| 24. do now in use.....                            | 35                  |
| 25. Motors now in use.....                        | 693                 |
|   | 172                 |

J. O. ALFRED LAFORREST, CIVIL ENGINEER  
Assistant-Superintendent, M. W.

## LOW LEVEL PUMPING STATION M. W. W.

JANUARY, 21ST, 1891.

B. D. McCONNELL, Esq.,

*Superintendent Water Works.*

DEAR SIR,

My annual report for the year ending December 31st, 1890 is respectfully presented.

## No. 1 WHEEL HOUSE.

All the repairs recommended in my last year's report were carried out, which consisted of some slight patching to the wood work and painting of doors, windows and double windows. A new stairs was placed in position replacing the stone steps removed in consequence of alterations to the delivery mains.

On the 1st. of July a leak sprung through and under the foundation wall which threatened very serious damage to the building, flooding the basement, water main tunnel and pump room to such an extent that they could not be reached. The water was found to be coming from the settling basin, through three separate channels: one from under the Breast-Wheel head race flume, one between the Breast-Wheel flume and the head gates of No. 1 Turbine, and the other under the foundation of No. 1 Turbine head race flume, uniting before reaching the foundation wall of the building and making its way to the North end of the same a distance of about 75 feet tunnelling a passage some 25" x 15 inches and about 18 feet below the surface, then taking a downward course returning through a subterranean passage directly under its upper course some 27 feet from the point of its downward course and 30 feet below the surface making its way under the foundation wall at this point. We found three openings made by the water passing under the wall, one 2' x 5" long, one 7' x 6" long and the other 10' x 9" long all of which openings measured about 10" inches from the bottom of the foundation wall to the hard pan on which the base of the wall was evidently laid as we found no timbers under the wall.

In order to repair these openings we had to excavate 31 feet deep between the settling basin and the foundation wall, a work that required the greatest care, every foot of which had to be stayed in the strongest possible manner, owing to the great pressure of the settling basin on one side of the cut.

So serious was the situation that the Committee resolved while in session to rise and visit the work; which visit filled them with such a sense of alarm that they directed that plans and specifica-

tions be made for the bringing of suction supply pipes to the steam engines from a point a little above the entrance of the Aqueduct into the settling basin, in order that the water could be kept out of the basin for an indefinite period, the City being supplied by steam power while the work of stopping the leak was being proceeded with.

Tenders were called for the necessary pipes, the estimated cost of which, including the work, was \$30,000 but under your able directions in less than forty eight hours after the pipes were advertised for I had the leak effectually and permanently stopped thus saving to the City the amount of \$30,000.

So effectually is the leak stopped that the slight leaks which appeared through the wall in the water main tunnel for many years are no longer present.

The leak coming from under the Breast Wheel flume was mastered by digging 57 feet from the surface and making a double 3 inch sheet piling between the Breast Wheel flume and the South wall of No. 1 Turbine head-race, carrying up a concrete wall between the same, 10" thick. The leak between the Breast Wheel flume and the head gates of No. 1 Turbine was also stopped by means of sheet piling, the piling running from the edge of the settling basin to a buttress of the Breast Wheel flume, entirely trapping the whole space, which was also concreted. There was also sheet piling driven the whole length of the back of No. 1 Turbine head race wall between said wall and the foundation of the building, the object of this piling was to enable us to carry up a concrete wall backing the masonry, thus effectually preventing any leakage from coming through the wall it being found in a very leaky condition.

The difficult leak to master was the one coming from under the foundation of No. 1 Turbine head race masonry, the wall being very much undermined.

An iron pipe was procured about 6" diam. x 10' long, one end of which was securely fastened into the leak channel and a wall of concrete built around it in order that there would be no escape from the pipe other than into the leak channel and under the foundation so that the space washed out under the wall would be filled up. Cement pans were procured and gangs of men put to work mixing the cement and sand into a thin grout, a constant pour of which was kept up until the pipe was full thus keeping a pressure due to a ten feet head on the solution until the cement set, when the water was let on proving the leak to be a thing of the past.

The washout under the foundation of the building was repaired by thoroughly cleaning out under the wall, finding the hard pan and filling up the space with cement concrete.

All the repairs that at present appear necessary is the painting of the roof and railing of the gallery inside the building.

## Nos. 2, 3 AND 4 WHEEL HOUSE

All the repairs to this building called for in my last report were carried out. There is a leak from the Tail Race through the joints of the masonry into the pump room that is more inconvenient than serious, some successful efforts have been made in stopping the heavier portion of these; a portion of the Breast Wheel foundation in the tunnel and the joints of the mason work in the wheel race discharge were pointed. The ice forming here adheres firmly to the cement pointing of the joints pulling the same out when leaving, making it an annual repair.

As the water is making its way through several places in the roof, more than painting may be required when the roof is examined.

### THE WORK SHOP.

There is an extension to this building spanning the Waste Weir which shows a very perceptible settling. The extent or nature of the repairs required to remedy this I am unable to state at present, it is so completely covered with snow and ice.

The roof should be painted. The shop is otherwise in fair condition.

### THE BRASS FOUNDRY.

This building is in fairly good repair with the exception of the roof which requires painting. The base of the chimney adjacent to the furnace shows signs of working.

### THE DWELLINGS.

The repairs recommended to these buildings were not carried out. If it is desirable to keep things up, prevent rot from getting into the wood work, the whole outside wood work should be painted, the roof also. The floor of the kitchen of two of these houses is considerably worn, the occupants request that they be repaired, and that some alterations be made to the partitions.

### No. 1 ENGINE HOUSE.

This building is in good repair with the exception of the roof which should be painted.

There is however the settling of the north east corner of the extension before reported.

### THE BOILER HOUSES.

Are all in fairly good order. Cement floors were laid in two of these houses which present a very nice even appearance, the roof requires painting; some other minor repairs to doors and windows may be necessary.

## THE COAL SHED.

The building is in very good order. A number of the cast iron upright posts require lifting and resetting, which will be attended to as opportunity will permit. The weigh house attached is in a very dilapidated condition being very much frost heaved.

## THE GROUNDS.

The grounds immediately in front of the works being entirely uprooted consequent upon the laying of new mains, were put in their former good condition, there still remains the slope between the Turbine and the Engine House to be put in its former condition, which can only be done after the connection from the 24 " to the 30 " mains are completed. The railing in front of the Wheel House on the Tail Race should be painted.

## No. 1 TURBINE WHEEL.

Did good service during the year requiring no repairs worth mentioning. The wooden cogs in the large bevelled wheel on the counter shaft reported as much worn in my last year's report are still intact, it is almost morally certain that they will give out during the present year which will require a stoppage of the wheel for about 18 days while new cogs are being placed in position. Some other minor repairs will likely be necessary.

## No. 2 WHEEL.

I predicted in my last year report that heavy repairs might be looked for at any time, which was verified. On the 24th of Sept. a crack made its appearance in the cast iron rim of the north end of wheel. I called your attention to it and stated the nature of the repairs that I thought necessary, in which you concurred. I drew up a specification of the same at your request. The contract was awarded to Messrs J. & R. Wier, engineers and machinists of No. 25 Nazareth Street. The work was commenced on the 27th of October and finished on the 26th of December, which work was performed in a first class and workmanlike manner.

The wheel was not put into service then, there being some repairs necessary to the radial and upright arms, which worked loosely in their sockets, which work is in progress at the time of writing. It is also my intention to have the wheel painted before putting it into service. Of course we have not made a new wheel of it, but it is so much improved that it will be good for some years service. Considerable repairs were done to the pumps and their connections. It is difficult to see what repairs may be necessary to these parts during the year.



### No. 3 WHEEL.

The pumps and connections of this wheel were kept in commission by the usual (of late years) frequent packing, many repairs and sharp attention. These pumps and connections like those of No. 2 are in that condition, that it is difficult to see what extent of repairs they may require during the year.

### No. 4 WHEEL.

This wheel worked very well requiring no repairs worthy of mention. Present indications are that it will not require much during the year.

### No. 1 ENGINE.

This engine is in excellent order although having done a larger amount of work than usual owing to the shortage from the hydraulic machinery due to the leak.

Of course the proper keeping up of an engine of such magnitude and many parts, must always be considerable and incur some expense. We have experienced some difficulty through the giving out of the boiler feed pump. I do earnestly wish you would furnish me with another feed pump as it is anything but profitable or agreeable to be obliged to stop the engine, blow off steam and keep the boiler under banked fires, while repairs are being done to the feed pump.

### No. 2 ENGINE OR THE GILBERT ENGINE.

Is a thing of the past it having been removed and broken up for scrap. Its site presents a very inviting appearance for the erection of another engine in its place which in my opinion cannot long be delayed with impunity.

### No. 3 ENGINE.

This engine got that thorough overhauling so long desired which was done by our own staff with the assistance of two machinists employed from outside.

The four pistons, high and low pressure, were thoroughly overhauled and put in first class condition. The piston rods were put in the lathe in our own shop and turned. New neck bushes were fitted into the cylinder head stuffing boxes and the glands of the same rebushed. The internal head stuffing boxes between the high and low pressure cylinders were furnished with new spiral springs and six of the piston bolts renewed. The slide valves were refitted also the balance valve pistons. The steam chests and steam chests

covers joints were remade as well as all the steam and exhaust joints, also the throttle valve joints, and the valves refitted.

The reflux valve on the delivery main in the valve pit outside the building was properly adjusted and the stop valve spindle which was found bent and the thread drawn, was put right. Portions of the cylinder drain pipes were renewed, and four new drain cocks connected to the same. The lagging was very much repaired, and one of the bottom stay bolts in the south east pump which was in a leaky condition was put right.

In a word all and everything was overhauled that required overhauling and put in first class order. The engine also got two coats of paint and one coat of varnish.

The engine and all its connections have worked splendidly since they were repaired. The drain pipe in the valve chamber above mentioned is choked, it will require attending to next summer and the chamber should be cleaned out.

#### **No. 1 BATTERY OF BOILERS.**

No repairs were done to this battery ; a section of the feed pipe in front of the boilers became leaky, it was removed and several of the main steam pipe joints remade. The boilers fronts and all their connections were painted. They were tested by Mr. E. O. Champagne, City Boiler Inspector on the 11th of September and pronounced all right. The door linings will require to be renewed, and a new set of grate bars may be necessary.

#### **No. 2 BATTERY OF BOILERS.**

This battery is in good order also, all the main steam pipe joints and those of the stop valves were renewed. They were also tested by the City Boiler Inspector, on the 11th of September and pronounced all O. K.

#### **No. 3 BATTERY OF BOILERS.**

This battery is also in good order, all the main steam pipes and other joints connections were remade and new nipples furnished where the blow off pipe connects with the boiler, which blow off pipe was altered to suit the new cement floor it being graded to carry off the water to the end where the drain is. Some of the brass gauge cocks will require to be renewed, a new set of grate bars will also be necessary. This battery was not tested ; I will call upon the Inspector shortly to do so, they are however in good order.

## THE PORTABLE STEAM PUMP AND BOILER.

The apparatus was frequently employed during the year. The boiler shows signs of long service, it being about 20 years old, several of the joints of the shell are leaking, caulking would remedy this, but taking into consideration that the boiler was always too small and the pressure allowed too low for the high lift the pump is frequently required to perform, 20 years practice proving that continuous running with a water lift of 22 feet and 80 lbs of steam is impossible. I believe it would be judicious to have a new boiler of about 25 % more power and carrying a working pressure of 100 lbs of steam. Two lengths of 25 feet each of ejector rubber hose were furnished this pump. This pump and its connections are in good order.

There is at the junction of Atwater Avenue and Centre Street an incandescent light which if removed and replaced by an arc light, it being adjacent to the works would very much assist in lighting the grounds of the same until such time as the Committee in its pleasure may see fit to furnish the works with the light of our times. All the American travellers visiting the works freely express their astonishment at seeing the coal oil lamp brackets in position, thinking such a system of lighting is behind the age.

I would recommend that a Babcock be placed in each of the buildings. One in No. 3 Engine House. One in No. 1 Turbine House. One in the Breast Wheel House and one in the Work Shop; also that a 2½" brass plug cock be attached to each of the stand pipes to which the fire hose are fixed.

In conclusion, I beg to return you my sincere thanks for the kind manner in which you have assisted me in the discharge of my duty.

The whole respectfully submitted,

I have the honor to be, Sir,

Your obedient servant,

D. KEARNEY,

*Engineer Low Level Pumping Works.*

## HIGH LEVEL PUMPING STATION McTAVISH STREET

JANUARY, 1891.

B. D. McCONNELL Esq.,

*Supt. Water Works.*

SIR,

I respectfully beg to submit my annual report on work done, condition, and requirements of McTavish street Reservoir and pumping station and High Level Reservoir.

### THE WORTHINGTON ENGINE.

This engine is in the same condition as last year and requires but a few light repairs: it worked about two weeks last summer during the cleaning out of the High Level Reservoir and whilst making some repairs to the Gilbert Engine. It is ready to work at any moment.

I would recommend this engine to be turned into a condensing engine. It can be done at a small expense by connecting a surface condenser to the suction pipe and get a small donkey or air pump to take away the condensed water, as she makes considerable noise exhausting into the open air.

### THE GILBERT ENGINE.

This engine is working every day, has worked well throughout the year, and gave no trouble other than the shifting of the slip-socket in high pressure cylinder; this we set back and so fastened as to give no further trouble; 5 tubes in the condenser also shifted, they were set back and the ends beaded. The friction gear frame got slightly worn and had to be repaired. The 24 brass valves I put in high pressure pump two years ago have worked well and show very little sign of wear.

I renewed 90 rubber valves and 20 springs during the year.

I would recommend the purchase of the big plungers from Messrs Gilbert, as they are fitted to the pumps and we would have no delay in case we wanted to increase the pumping capacity.

The running of the 20 inch main from Engine House to head of Peel street is a decided improvement, it has reduced the pressure on the pumps from 110 to 100 lbs.

Owing to the increased consumption on the High Level Reservoir we will require to increase the annual supply of coal. Welsh coal is most suitable; this coal to be got in large size lumps, none to be received under the size of furnace coal, there is less waste and does best work, and comes cheaper than American coal.

## THE BOILER

Worked well during the past year. One joint and a few rivets had to be caulked. The steam superheater gave no trouble at all. The water heater under the boiler gave considerable annoyance by tubes giving out. I had to renew 12 of them. I would recommend a new heater to be made; the tubes to be brass instead of iron, the same bends can be used, this would last much longer and when worn out, the tubes could be sold for old brass, or melted down and used by the department.

The covering on boiler requires some repairing. The steam pipe in Engine room would look better if covered with cotton and painted.

## THE DWELLING

Is in good repair; the cornices were painted and a few broken slates renewed the past year. A new set of steam heating pipes is required, the old ones are worn out and leaking. The hot water lead pipe from furnace to bath room will require to be renewed the present one is eaten out by steam and leaky. The outside windows want painting.

## THE WORTHINGTON ENGINE ROOM.

The walls of this room require whitewashing, and the wood work to be varnished. The cement water-course around outside of building is broken up with frost and will require to be renewed. I think wood blocks the best. Also to build an arch over the delivery pipe from this building to be about 20 feet long, the present one is falling in, the bricks having crumbled away.

## THE GILBERT ENGINE ROOM.

Is in good repair, the cornices were painted. A skylight and a new porch put on which adds much to the comfort of the buildings. All the wood work in this room wants a coat of varnish or linseed oil. I would like a set of cupboards to keep tools in; the floor to be painted and a pair of travelling cranes.

## THE BOILER HOUSE.

This house is in good repair, there was a skylight put on the roof and the cornices of the building were painted.

We want two porches for the doors, the walls to be white washed, a new floor to be laid of concrete or flags, and a blow off pipes from boiler to run through the roof.

The new ash pit which was built last summer adds much to the convenience of the place. The chimney is in good order but will require a tapering cap for top to increase draught.

The coal shed is in the same condition as last year, the roof is leaky and will require to be repaired as early in spring as possible. The scale house wants a new floor, the scales to be overhauled and tested.

### THE TELEPHONE.

has worked rather poorly for the past year, same as year before. Our communications with the wheel-house since the circuit was changed have been anything but satisfactory.

I would recommend a branch of the central telephone to be added here as this is the only station without one, it would give us a double chance to communicate with the City Hall, Wheel-house or Work shop.

### HIGH LEVEL RESERVOIR.

This reservoir was cleaned out last summer; there was very little sediment in it, as it was cleaned out the year before. The masonry is in good repair, all joints seem good. It would be recommendable to have the bottom levelled off and concreted as it would save a lot of time when cleaning.

The iron drain pipe laid from Reservoir down to sewer on Peel street is a great improvement over the tile drain.

It would be recommendable to have this Reservoir enlarged as the present capacity is insufficient for the section it has to supply. During the High School fire 28 Nov. 1890, the water lowered a foot per hour, we had to start the Engine and pump three hours extra.

A new door and porch are wanted for the valvehouse.

### McTAVISH RESERVOIRS.

These reservoirs were thoroughly swept and washed out last summer, there was a considerable lot of mud or sediment on the bottom. The masonry of the front walls was examined carefully and all soft or bad joints repaired, they are in good order now and show no leakage whatever. There is considerable surface water coming in through back wall to the reservoirs, it will be necessary to dig a trench back of the wall, to concrete and point it in front and rear with cement and puddle back of wall with clay.

The water course around reservoir which is made of cobble stones is in poor condition and should be replaced with one of concrete, to be of any use.

There has been considerable repairing done to the old portion of the centre wall and it requires considerable work done to it yet. There where four coping stones broken out to see how it looked in the middle of the wall, which shows no sign of cement in it, nothing but dry stone and sand. Where those stones were taken out there was a lot of grouting poured in, varying from one half to two barrels cement under each stone. It will be necessary to take up or shift all the coping stones of this old wall to get a chance to pour grouting into it ; also to remove stones from sides of wall to get grouting into bottom. There are several small leaks in the new portion of centre wall which will require fixing.

It would be a good idea to empty these reservoirs twice or three times a year. it would change the entire body of water and prevent considerable green scum accumulating.

### THE VALVE HOUSE.

The joints in masonry on outside of this building want pointing, the boards over wells to be renewed as they are rotten and not safe to carry any one. We put in four valve rods on drain pipes by which we can work them from valvehouse without going into the well as formerly which necessitated the cutting off of water from the City. Those rods will require to be stayed by iron brackets which will steady and strengthen them. The valvehouse ceiling, doors and windows want painting and the water gauge to be repaired.

### THE GROUNDS

The banks, slopes and grounds were kept in good order last summer, the grass regularly cut and weeds cleaned out. The banks were considerably cut up by horses and carts during the cleaning of reservoir, last summer, and it will take about two hundred loads of earth to fix the place up again. The board covering on wall at foot of slopes on Carleton Avenue are decayed want to be renewed and tarred.

The wire fence on bank to be straightened and a wooden fence be put up at north side on Carleton road to protect the place at night and would also prevent people walking on grass slopes. This fence to be same as present one and to be about 260 feet in length.

If we could get an electric light placed in front of valve house it would add much to the comfort of visitors on summer evenings and be of great use to us ; it would also light up Carleton road.

The whole respectfully submitted,

I have the honor to be, Sir,

Your humble Servant,

JAMES COLEMAN.

# WATER WORKS SHOP, JANUARY, 1891.

**B. D. McCONNELL, ESQ.,**

*Superintendent Water Works.*

**DEAR SIR,**

I respectfully submit the report of the work done under my administration during the year ending 31st December 1890.

## REPAIRS, &c.

Schedules Nos. 9-9a show all repairs done to main pipes, hydrants, services, &c.

Improvements to main pipes, hydrants &c., Schedule No. 12 of this appendix, shows the pipes, hydrants, valves, services, &c., laid in the city during the year 1890.

The improvements made on main pipes, have given very good satisfaction; and more improvements should be continued year after year until the City Council, the Fire dept. and the Water Works officials are satisfied that the water pipes in all the Streets of the city are of a sufficient size to maintain the pressure and give abundance of water in case of fires, &c. The importance of these improvements was well shown during the extensive fires that occurred last year. In all cases, no pumps nor steamers were required to extinguish them; for the pressure and abundance of water were all that was required in the localities where large pipes were laid.

Therefore I strongly recommend that larger pipes be laid in all the following Streets.

## 24" PIPES.

Notre-Dame Street from present end of 24" at Papineau Square to Berri Street.

Berri, from Notre-Dame to Commissioners.

Commissioners from Berri to St. Sulpice.

St. Sulpice, from Commissioners to present end of 24" pipe below St. Paul.

St. James, from present end of 24" at Windsor to Guy.

Guy, from St James to William.

## 20" PIPES.

Guy, from St. James to Dorchester.

Amherst, from Craig to Notre-Dame.

This would complete the lower level line of rising mains which is of the utmost importance.



## 16" PIPES.

Amherst, from Sherbrooke to Roy.  
 Guy, from Dorchester to St. Catherine.  
 Lagauchetière, from Radegonde to Windsor.

## 12" PIPES.

Dominion, from St. James to St. Antoine.  
 Champ de Mars, from Gosford to Lacroix.  
 Rousseau from Lacroix to Campeau.  
 Common, from below Grey-Nun to Colborne.  
 Cathedral, from Osborne to Lagauchetière.  
 Ontario, from below St. Germain to East limits.  
 St. Lawrence, from St. Catherine to Sherbrooke.  
 Papineau Road, from Ontario to Sherbrooke.  
 Mignonne, from St. Denis to Harbour.  
 St. Catherine, from Harbour to St. Michael Lane.  
 Lagauchetière, from St. Radegonde to Papineau Road  
 Lafontaine, Fullum to Harbour.  
 Notre-Dame, from Mountain to Canning.  
 Park Avenue, from Sherbrooke to Pine Avenue.  
 Duquette, from Moreau to St. Germain.  
 Mignonne, from St. Denis to St. Urbain.  
 St. Jean-Baptiste, from Drolet to Berri.  
 Bleury, from St. Catherine to Sherbrooke.  
 Berthelet, from Bleury to Union Avenue.  
 Burnside, from Union Avenue to Stanley  
 Guy, from St. Catherine to Sherbrooke.  
 Sherbrooke, from St. Denis to Papineau Road.  
 Sherbrooke, from McTavish to University.  
 Sherbrooke. Guy to Atwater Avenue.  
 Atwater Avenue, from Sherbrooke to St. Catherine.  
 Roy, below St. Hubert to Mentana.  
 Roy, from St. Lawrence to St. Hypolite.  
 Rachel, from Cadieux to Berri.  
 Mount-Royal Avenue, from St. Lawrence to Cadieux.  
 Dorchester, from Fort to Atwater Avenue.  
 Congregation, from Wellington to Leber.  
 Leber, Sébastopol to Charron.  
 Grand-Trunk, from Shearer to Napoléon Road.  
 Island, from St. Patrick to Grand Trunk,  
 Hibernian Road, from Grand-Trunk to Wellington.  
 Wellington, from Magdalen to Hibernian Road.  
 St. Patrick, from Island to West limits.  
 Fullum, from Ontario to near Sherbrooke.  
 Shearer, from Center to Grand-Trunk.  
 Delisle, from Canning to West limits.

The 12" main in Sherbrooke Street from Bleury to St. Denis, must be completed ; that is, all the cross connections.

University, from Sherbrooke to Dorchester must also be completed.

### 10" MAINS.

Parthenais, from Mignonne to Amity.

Cherrier, from Amherst 16" main to St. Denis 12" main.

There should be two pipes in that street.

Pine Avenue, from St. Urbain to Amherst ; when it will be opened.

Prince-Arthur, from St. Dominique to Laval Avenue.

Laval Avenue, from Prince Arthur to 10" main at Albina.

Prince-Arthur, from Park Avenue to Durocher.

Durocher, from Sherbrooke to Pine Avenue.

St. Maurice, from McGill to Inspector.

College, from McGill to Chaboillez.

Ottawa, from McCord to near Versailles. Where 10" main goes across the Lachine Canal.

Aqueduct, from St. Antoine to Overdale Avenue.

Argyle Avenue, from Aqueduct to west of Mount St. Mary Av.

Inspector, from St. James to Notre-Dame.

Inspector, from St. Antoine to Lagachetière ; when opened.

Latour, from St. Radegonde to St. Monique.

Dufresne, from St. Catherine to Nelleda.

St. Etienne, from Mill to Britannia.

Britannia, from St. Etienne to Tail Race, Tail Race side, from Britannia to Conway, or Forfar.

Albert, from Mountain to Chaboillez Square.

Richmond from near Grand-Trunk railway track to intersection of the two 4" pipes south of Richmond Square.

Hutchison Avenue, from Milton to Pine Avenue.

Chaboillez, from College to Notre-Dame, 10" main.

Colborne, from Notre-Dame to Wellington.

St. Urbain, from Mignonne to Pine Avenue

Youville, from McGill to Norman.

Napoléon, from St. Lawrence to Laval Avenue.

Visitation, from Ontario to Mignonne.

Champlain, from below hill to Sherbrooke;

### 8" MAINS.

St. André, from Dorchester to Ontario.

Davidson, from Notre-Dame to above St. Catherine.

Darling, from St. Catherine to Notre-Dame.

Mignonne, from Desery to near Moreau.

Robillard, from Moreau to Seaver.

Seaver, from Robillard to end of 4" pipe.

Poupart, from Mignonne to Logan.

Maisonneuve, end of 4" to Sherbrooke.

Panet " " "

Beaudry " " "

St. Pierre Lane " " "

Montcalm " " "

St. Christophe " " "

Longueuil Ferry, from Notre-Dame to C. P. R. tracks.

Fripponne, St. Paul to Commissioners.

Dubord, from St. Denis to Campeau.

Leroyer, from half way above Claude to Jacques-Cartier Square.

St. Denis west side, from Ernest to Rachel.

Sanguinet from Ernest to Pine Avenue.

Pantaléon from Sherbrooke to Napoléon.

Pine Avenue, from Mance to Park Avenue.

Milton, near Park Avenue to Shuter (when opened).

Clarke, from below St. Jean-Baptiste to Mount Royal Avenue.

St. Jean-Baptiste, from St. Urbain to Laval Avenue;

University, from Sherbrooke to Milton.

St. Catherine, North side, from Fort to Towers.

Quiblier, from Sussex to near Fort.

Hunter, from Chatham to Canning.

There are also some main pipes which we proposed to lay last year on many streets which are not mentioned here ; but which should be laid as soon as possible.

All the above named streets should not be permanently paved before all the aforesaid main water pipes are laid in each of them.

The 12" pipe high level line on St. Catherine Street should be connected to the low level line in two places ; say at Atwater Avenue, and at Mountain or Guy Streets.

The main pipes reported defective and too small in my last year's report at page 21 should be attended to.

The pipes with dead ends mentioned in the same report, pages 22, 23, 24, 25, should also be extended as soon as possible.

In all the streets to be widened there will be more or less improvements to do to mains, hydrants and services before said streets are permanently paved.

The 6" pipe on Seigneurs street, below Dorchester, should be lowered as the services on it froze every winter since said street was graded some years ago.

The 24" main in Ontario street will have to be lowered ; if said street is opened with subway, under the Canadian Pacific Railway tracks.

The 10" main on St. Gabriel Street will also have to be lowered to suit new grade. Sludge cocks should also be put on all large pipes to save pumping when emptying them.

**12" VALVES REQUIRED.**

Corner St. Catherine and Fort Street.  
 Corner Ontario and Visitation Street.

**10" VALVES REQUIRED.**

St. James, corner St. Martin.  
 Notre-Dame, corner Colborne or east of Murray.  
 Notre Dame, corner St. Vincent.

**HYDRANTS IMPROVEMENTS.**

Five nozzle hydrants Montreal Water Works Pattern should be put in all the streets, where there is a main pipe large enough to supply them, in place of the old ones ; which are too small and defective and placed as follows :

McGill and Recollet .  
 Ottawa and Young.  
 Notre-Dame and Colborne.  
 Dorchester, between St. André and St-Christophe.  
 Dorchester and Berri.  
 Dorchester and Sanguinet.  
 Dorchester and German.  
 St. James and Imperial Avenue.  
 St. James and Inspector,  
 St. James and St. Martin.  
 St. James and Chatham.  
 St. Patrick and Island.  
 University and Pine Avenue.  
 St. Lawrence and Guilbault.  
 St. Lawrence and Napoleon.  
 St. Denis and Roy.

The two steamers for thawing hydrants, &c., want new sleighs, wheels, &c. This should be attended to this year, and the whole should be made ready before the snow is off the ground.

**SERVICE REPAIR, &c.**

The service boxes on St. Catherine, Mountain, Notre Dame, St-Patrick and in all streets where permanent sidewalks are to be made, will have to be renewed. These boxes might be made in cast iron  $\frac{3}{8}$  of an inch thick with a 3 inch flange at the bottom, a wrought iron rod, and rod holder at about 8" from the top ; which would shut said boxes and prevent any stones or earth filling them up. All new service stop cocks with boxes should be put near the chain stone. It will be advisable to have men to put on service plates, where new wooden sidewalks were made.

## FOUNTAINS, &c.

Considerable repairs were done to fountains during the year.

All the fountains and troughs should be painted again early in the spring. I think that one coat of paint will be sufficient.

The trough at the corner of Moreau and Notre-Dame street had to be moved to Notre-Dame street near Ruisseau Migeon.

The position of the trough at Papineau Square had to be changed.

The trough at the corner of Ontario and St. Denis was also changed to about two hundred feet below St. Denis street.

The fountain in St. Louis Square was raised about six feet and four new jets were put in, one in each corner of the large basin.

New troughs, &c, were put on St. Catherine street near Atwater Avenue. On Ottawa, corner Dalhousie. On St. Patrick, near Wellington, where the old one had to be moved on account of new paving and alteration to the street.

A new large basin was made on Papineau Square. Pipes and four jets were put in it.

The Court house square fountain will have to be taken apart to repair one of the pipes broken inside the column.

New drinking troughs and drinking taps might be put in the following places :

Rachel and Frontenac.

St. Denis, corner Roy, opposite the Deaf and Dumb asylum.

Mount Royal Avenue, west of St. Urbain.

Moreau above Logan.

The shops at the corner of Lagauchetière and St. Charles-Borromée street, are now very old and the walls, roof, &c., are not in a very safe condition.

Respectfully submitted,

Your obedient servant,

CHAS. LAGACE,

*Foreman.*

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## ROCK GATES, AQUEDUCT, JANUARY 1891.

B. D. McCONNELL, Esq.,

*Supt. M. W. W.*

DEAR SIR,

I respectfully submit my report on the improvements and repairs done along the line of Aqueduct during the year ending December 1890, which are as follows;

A new bridge at Crawford's and Stephenson's farms. Peniston's bridge was repaired, also the crib work to Parker's bridge. The Regulating gates bridge on Inland cut was planked. The road leading to the new Regulating gates was raised and stoned; the ditch along Parker's and Robert's farms was cleaned. The ditch from culvert on Inland cut, Dunberry's and Frazer's farms to the Lachine Road was cleaned. Ditches and farm culvert, north side from Parker's swamp, were cleaned; also berm ditches on north side of Inland cut. The culvert under Dunberry's road was repaired. Crawford's road was stoned and gravelled. The bridges along the line of Aqueduct were painted. The usual repairs to fences, and approaches to bridges were done, also the usual cutting of weeds.

I remain your obedient servant,

EDWARD SALLY,

*Guardian of Aqueduct.*

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## PATHOLOGICAL LABORATORY

McGILL UNIVERSITY,

Montreal, Oct. 15th 1890.

B. D. McCONNELL ESQR.,

*Superintendent City Water Works. Montreal.*

SIR,

Following your instructions I have made a biological analysis of samples of water taken from the three sources indicated. The samples were collected on September 22nd at the same time as those taken by Dr. Rutan. That from the settling basin was re-examined on October 1st.

The number of bacteria present in the different samples was as follows, calculated as per cubic centimetre, or  $\frac{1}{16}$  of a cubic inch.

|  | 800 feet<br>south of<br>Nuns Island | Inside<br>Nuns<br>Island. | Settling<br>Basin. | Settling<br>Basin |
|--|-------------------------------------|---------------------------|--------------------|-------------------|
| Date of collection of samples...                 | Sept. 22                            | Sept. 22                  | Sept. 22           | Oct. 1            |
| Number of samples examined..                     | 4                                   | 4                         | 4                  | 2                 |
| Highest number of bacteria in<br>one sample..... | 100 per C. C.                       | 62 per C. C.              | 73 per<br>C. C.    | 82                |
| Lowest number of bacteria in<br>one sample.....  | 79    "                             | 48    "                   | 48    "            | 78                |
| Average of all samples.....                      | 82    "                             | 54    "                   | 57    "            | 80                |

These figures show very little difference between the samples, and in the absence of definite information as to the species present in each case I am not inclined to draw conclusions from them, as to the relative purity of these waters.

As far as could be judged from a single examination the bacteria present in the St. Lawrence water appear to be chiefly of the class of harmless, color producing "water" bacteria; while those of the Ottawa waters were chiefly of the class of putrefactive bacteria producing changes in the substance upon which they were grown.

An important fact brought out by the examination is that the minimum number of bacteria present in any one sample was con-

siderably in excess of that which should obtain in a good drinking water, none of the samples therefore are fitted for direct use unless some provision is made for settling or filtration.

The microscopic examination of the sediments in the different samples, did not reveal any positive evidence of contamination, though the Ottawa waters contained traces of vegetable forms (crenothrix) usually found only in stagnant waters. These forms being absent from the St. Lawrence water.

I have the honor to be,

yours respectfully,

WYATT JOHNSON, M. D.

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**CHEMICAL LABORATORY, MCGILL UNIVERSITY**

**FACULTY OF MEDICINE**

Montreal Oct. 13th 1890.

**B. D. McCONNELL Esq.,**

*Supt. M. W. W.*

**DEAR SIR,**

In accordance with instructions received from you I collected, on the 22nd of September last samples of water from (1) 800 ft. (about) south of the middle of Nun's Island, (2) about 40 ft. above the pier which marks the point from which the St. Cunegonde water supply is taken, (3) From the settling Basin.

Each sample was taken at a depth of about 2 feet from the surface.

On the 8th of October, in accordance with further instructions, I took samples of water from the Lower Reservoir. These were taken from about the middle of the western half of the reservoir at a depth of about 2 feet.

The tabulated results are given in parts per million and arranged according to the plans adopted by Department of Inland revenue, to facilitate comparison.

In the table the color is not accurately described as no tintometer was available, but the water from the settling basin was of a decidedly deeper brown than either of the other samples of Ottawa water.

Under the head total solids will be seen a column, shewing the proportion of organic and volatile, to the total residue.



This is valuable when samples of water from the same source of supply are to be compared and, in conjunction with the results of the analysis of the organic matter, aids in shewing the relative and absolute value of water.

The results to be found in the accompanying table shew that relatively the waters at the time of analysis should be placed in the following order of purity.

1st. Water outside Nun's Island (St. Lawrence).

2nd. Water between Nun's Island and St. Cunegonde.

3rd. The Lower Reservoir water.

4th. The water from the settling Basin.

While none of the samples analyzed are sufficiently bad to be classed as "dangerous" or "impure" yet there can be little doubt that water containing so high a percentage of nitrogenous organic matter as that found in the settling basin must be regarded with suspicion. In the event of an epidemic of any disease communicated by drinking water, no water giving such results could be regarded as perfectly safe.

Since however the Ottawa water is very variable in its composition, especially in its nitrogenous constituents, a few analyses made at irregular periods can give no true conception of its value as a source of supply.

A proper estimate of the true condition of our city water can only be made when the results of a number of systematic analyses extending over a period of at least one year are compared. This is the course adopted by all the large centres of population in Europe and now by many American cities.

I remain sir,

Sincerely yours

R. F. RUTTAN, B A. MD.

*Lect. Chem. McGill Univ.*

TABULATED RESULTS OF THE ANALYSIS OF FOUR SAMPLES OF WATER TAKEN AS DESCRIBED BELOW.

| Reference Nos. | Designation of Samples                 | Condition of samples when collected. |                              |                         | Total solids (parts per million) |                                 |                             | Phenomena on ignition.             | Nitrogen (parts per million.) |                           |                           | Chlorine (parts per million.) | Phosphates.  | Amount consumed in 15 min. |       | Oxygen consumed by organic matter at 80° F (parts p mil) |
|----------------|--|--------------------------------------|------------------------------|-------------------------|----------------------------------|---------------------------------|-----------------------------|------------------------------------|-------------------------------|---------------------------|---------------------------|-------------------------------|--------------|----------------------------|-------|--|
|                |  | Temperature                          | Color                        | Turbidity               | Residue at 100° C.               | Residue after evaporation (ash) | Organic and volatile matter |                                    | As albumenoid ammonia.        | As free & saline ammonia. | As nitrates and nitrites. |                               |              | Amount consumed in 15 min. | hrs.  |  |
| 205            | South of Nun's Island (about 800 feet) | 17 2° C.                             | Pale straw nearly colorless. | tinted (mrk'd)          | 131                              | 90                              | 41.31 29 %                  | Blackened ...                      | 0.119                         | 0.032                     | 0.186                     | 4.25                          | heavy traces | 0.659                      | 2.601 |  |
| 206            | Between Nun's Island and main land.    | 17 2° C                              | Light brown                  | slightly tinted.        | 112                              | 82                              | 30.26 78 %                  | Blackened with scintillation ..... | 0.158                         | 0.012                     | 0.135                     | 2.55                          | heavy traces | 2.870                      | 4.054 |  |
| 207            | From the settling Basin.               | 17° C                                | brown                        | slightly tinted         | 95                               | 61                              | 34.36 84 %                  |                                    | 0.202                         | 0.024                     | 0.101                     | 3.00                          | heavy traces | 3.451                      | 5.510 |  |
| 209            | From Lower Montreal Reservoir.         | not taken                            | light brown                  | almost clear opalescent | 77                               | 46                              | 31.40 26 %                  | Blackened ...                      | 0.168                         | 0.026                     | 0.120                     | 2.50                          | heavy traces | 3.027                      | 4.451 |  |

LABORATORY  
OF THE  
INLAND REVENUE DEPARTMENT  
OTTAWA, CANADA.

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BULLETIN No. 15.

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OTTAWA RIVER WATER.

R. MIALL Esq.,

*Commissioner of Inland Revenue.*

SIR,—In consequence of the passage of a resolution by the City Council of Montreal on the 13th January last, calling the attention of the Government to the pollution of the River Ottawa by sawdust, and pointing out the danger to the water supply of Montreal from this cause, the Minister of Inland Revenue was requested by the Minister of Marine and Fisheries "to allow the Chief Analyst to report on the present and prospective effect on the water supply of Montreal from the escape of sawdust and mill rubbish into the Ottawa River." Since this branch can only deal with the chemical aspect of this matter, it was represented to you that it would be necessary to procure and analyze samples of the Ottawa river water from above and below the Chaudière Falls, and at various points betwixt here and Montreal. Your approval of this course was obtained on the 13th February, but other work prevented the possibility of beginning the collection until the end of March. The results of the investigation, which was carried out by Mr. McGill, Assistant Analyst, were reported to the Department of Marine and Fisheries on the 11th of the present month. These are of sufficient public interest to justify their publication in a bulletin, and they accordingly form the subject of a special report by Mr. McGill, which is attached hereto.

In beginning this investigation it was supposed that the question as to whether the sawdust and lumber refuse which is thrown into the river at Ottawa injuriously affects the quality of its water

lower down could best be answered by ascertaining whether any increase took place in the quantity of the organic matter present in the water in its course towards Montreal. It is well known that the refuse wood and sawdust becomes water-logged and sinks, forming deposits in the river at various points below Ottawa. It there becomes subject to decomposition, and gas is produced, which is sometimes thrown up to the surface of the river in considerable quantity. The nature of the change which goes on is probably analogous to that of the initial stage of the process by which woody fibre is converted into coal. It would not be unreasonable to suspect the formation of peaty matter or humous substances, which might possibly be partially soluble and consequently increase the amount of organic matter in the water. From Mr. McGill's results it would appear that whatever may be the nature of the change going on in the sawdust deposits it is not of such a character as to render their organic matter soluble in water. The water of Deschenes Lake requires fully as much permanganate for the oxidation of its organic matter as does the water below Grenville, that in the Lake of Two Mountains or that supplied to the city of Montreal.

With regard to the Montreal water supply, Mr. McGill's analyses now published show that it is essentially different in character from that of February, 1888. The following analyses, published in Bulletin No. 5, show the quality of the water for that winter:—

| Date of Collection | Source.                     | Nitrogen—Parts per Million. |                             |                           | Chlorine in Chlorides Parts per Million. | Oxygen Consumed by Organic Matter at 8° Fahr. |        |
|--------------------|-----------------------------|-----------------------------|-----------------------------|---------------------------|--|---|--------|
|                    |                             | As Albuminoid Ammonia.      | As free and Saline Ammonia. | As Nitrates and Nitrites. |  | 15 min.                                       | 4 hrs. |
| 1888.              |                             |                             |                             |                           |  |   |        |
| Feb. 8.....        | Wheel-house.....            | 0.1230                      | 0.0510                      | Undetermined.             | 3  | 0.3 60  | 0.480  |
| do 11.....         | Tap in Fire Station 11..... | 0.0658                      | 0.0082                      | 0.1418                    | 3  | 0.184   | 0.400  |
| do 11....          | Tap in Fire Station 11..... | 0.0526                      | 0.0082                      | 0.0918                    | 3  | 0.196   | 0.400  |
|                    | Average .....               | 0.0805                      | 0.0225                      | 0.1168                    | 3  | 0.247   | 0.427  |

The average of analyses Nos. 33-41, in Table II, given in Mr.

McGill's report, show the following figures for the water supplied to Montreal in April, 1890 :

|                                     | Parts per million. |
|-------------------------------------|--------------------|
| Nitrogen as albuminoid ammonia..... | 0·195              |
| do as free and saline ammonia.....  | 0·017              |
| do as nitrates and nitrites.....    | 0·109              |
| Chlorine.....                       | 3·22               |

Oxygen consumed by organic matter at 80° Fahr.:—

|                     |       |
|---------------------|-------|
| In 15 minutes. .... | 2·688 |
| In 4 hours.....     | 4·688 |

The greatest increase is in the amount of organic matter which in the water supply of 1890 was more than ten times the quantity contained in the supply of 1888. The cause of this great difference was explained to me by Mr. Kennedy, Engineer to the Harbour Commissioners, Montreal. It appears that during the winter of 1888 an accumulation of ground ice was formed at the foot of the Cascades rapids, blocking up the channel of the St. Lawrence, damming its water back around the west end of Isle Perrot, and causing it to flow down by St. Anne's. During the same time the water of the Ottawa found its outlet by the "Rivière des Prairies," and Montreal was wholly supplied with water from the St. Lawrence.

I have the honour to be, Sir,

Your obedient servant,

THOMAS MACFARLANE,

*Chief Analyst.*

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LABORATORY OF THE INLAND REVENUE DEPARTMENT.

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OTTAWA, 21st June, 1890.

THOS. MACFARLANE, ESQ., F. R. S. C.,

*Chief Analyst, Inland Revenue Department.*

SIR,—I have the honour to present you, herewith, my report upon the analysis of Ottawa river water, including an examination of the water of some of the more important tributary streams.

The samples were taken at a time when the river was undergoing great changes, due to the spring thaw, which occurred earlier than was expected. In fact I collected the samples from Deschenes Lake on the 25th March, the ice being perfectly sound, and over two feet thick. Four days later I proceeded to take samples a little below New Edinburgh, and found the ice only 7 or 8 inches thick, and so rotten and honey-combed that it broke with my weight. As a consequence, I found it necessary to delay the collection of samples at certain points until the river should open so as to permit the use of a boat. This accounts for the collection at Canadian Pacific Railway bridge so late as the 8th April, and at Grenville and Carillon so late as the 24th of this month.

As a consequence of these great changes in the character of the river, I have found it a matter of considerable difficulty to interpret some of the results of analysis. It is evident that the addition to it of the accumulated snow of winter must change very greatly the character of any river water for the time being. This change appears, from my work, to lie more particularly in the direction of increase of albuminoid nitrogen. I have not been able to find such full analysis of snow as would enable me to interpret quantitatively my tabulated results in this regard; and I would recommend that, at some future time, work in this direction be undertaken.

I have expressed the colour of the sample, as seen in a column of 24 inches, in terms of the standard glasses adopted by Mr. Lovibond, and furnished with his tintometer. I have found it possible to imitate very closely the colour of most of the samples—in every case after allowing suspended matters to deposit during twenty-four hours, and it is a great advantage to have an exact expression for, and a permanent record of the colour of each sample.

The contradictory results obtained in the case of certain samples emphasize the importance of collection by the analyst himself, wherever this is practicable. A moment's consideration will show that if the quality of an immense body of water in motion—as in the case of the Ottawa and St. Lawrence Rivers—is to be judged by the examination of a gallon of this water, it is of the greatest importance that this sample be absolutely typical of the whole. There are, of course, cases in which it is impossible with certainty to collect a truly average sample of reasonable bulk; but, in most cases, this is possible by carefully considering all the influences due to locality, tributaries, &c., and this can only be done, with perfect satisfaction to the analyst, by himself.

In the column headed "Value" in Table II, I have expressed the total results of analysis in terms of the scale adopted in Bulletin No. 5, page 20. As a ready means of stating, by the use of a single number, the character of a water sample, some such scale as Wigner's is certainly a great convenience. Too much reliance,

however, must not be placed upon any such reading as we have yet been able to give in a single number. Sample 4, for instance, shews better in this regard than sample 3; yet I have no hesitation in placing these samples as regards safety for domestic use in the reverse order. Sample 4 certainly contains less oxidisable vegetable matter, but the nitrogen as ammonia and albuminoid ammonia together with chlorides and phosphates present makes sample 4 much less desirable than sample 3 for food purposes.

As to the fitness of the Ottawa water for domestic uses, I may say that it contains nothing which must of necessity render it unwholesome. At the same time, the presence of so large an amount of organic matter in solution is not only a disagreeable feature, but renders the water capable of sustaining and nourishing, to a much greater degree than most water supplies, those minute organisms, which, while in most cases harmless, are closely related to others known to be specific disease germs. I am of opinion that a water so largely impregnated with organic matter, as is that of the Ottawa River, would become a very efficient *nidus* for the propagation of morbid bacteria, were such organisms once to find entrance to it. At the same time, the purification of the water by household filtration is a very doubtful cure; since the great majority of filters are allowed to remain in use without cleaning, until they do harm rather than good. Filtration, precipitation, or whatever other method of treating a town supply be adopted, should be carried out by the municipality to ensure its efficiency, and certainly the water of the Ottawa River could be improved by proper treatment.

I have the honour to be, Sir,

Your obedient servant,

(Signed), A. MCGILL,

*Assistant Analyst.*

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TABLE I.

## CHRONOLOGICAL Tabulation of Samples.

| Serial Number. | Collector's Number. | Date.               | Place of Collection. | Conditions Obtaining at Time of Collection of Sample.  |
|----------------|---------------------|---------------------|----------------------|--|
| 1              | 1                   | 1890.<br>Mar. 25... | Des Chênes Lake....  | About 1 mile off Aylmer, in main channel, at depth of about 10-12 feet. The ice was 28 inches thick.   |
| 2              | 2                   | do 25...            | Aylmer Bay.....      | From a hole, 100 yards from shore, whence carters draw water for use in the town; water here about 45 feet deep. Ice very dirty.   |
| 3              | 3                   | do 25...            | Des Chênes Lake ...  | About $\frac{1}{2}$ mile above rapids, in the main channel of the river. Ice sound, and about 20-24 inches thick.  |
| 4              | 4                   | do 25...            | Britannia Bay.....   | From a hole in the ice used by the villagers as a means of access to the water; the hole was covered by boards and the ice clean in the vicinity.  |
| 5              | 5                   | do 29...            | Rideau River.....    | From the west channel, at a depth of about 5 feet. The river was not frozen in the immediate neighborhood of the pier.   |
| 6              | 6                   | do 29...            | Ottawa River.....    | Above Ernacliffe, i. e., above sewer mouth, at a depth of 10 feet. Ice about 3 feet thick; sample taken in mid-channel.  |
| 10             | 7                   | do 29...            | do .....             | From hole in ice, about 100 yards above the winter road between Gatineau and Rockliffe; this is below sewer mouths. Ice about 7 inches thick, but very rotten; samples from near mid-river, at depth of 10 feet. |
| 11             | 8                   | do 31...            | Gatineau River ..... | At Wright's bridge.  |
| 6              | 9                   | do 31...            | Ottawa River.....    | Hull water supply. Sample from Aylmer road bridge, about 100 feet above mouth of supply pipe.  |
| 12             | 10                  | April 2...          | do .....             | At L'Ange Gardien, about 200 feet from shore, at depth of 10 feet. Ice quite sound and about 18 inches thick.  |
| 13             | 11                  | do 2...             | Lièvre River.....    | At Basin du Lièvre, from pier of road bridge at depth of 3 to 4 feet.  |
| 7              | 12                  | do 3...             | Ottawa River. ....   | At laboratory tap, which was allowed to run at full capacity for two hours before taking sample (aqueduct water).  |



TABLE I.

CHRONOLOGICAL Tabulation of Samples.—Continued.

| Serial Number. | Collector's Number. | Date.           | Place of Collection. | Conditions Obtaining at Time of Collection of Sample.  |
|----------------|---------------------|-----------------|----------------------|--|
| 33             | 2,093               | April 5... 1900 | Montreal.....        | From tap in Inland Revenue Office, supplied from lower level reservoir, McTavish St.   |
| 35             | 2,095.              | do 7...         | do .....             | From tap in wheel-house of Montreal water works  |
| 37             | 2,097               | do 7...         | do .....             | From upper level reservoir, Montreal water works, Mount Royal Park.  |
| 39             | 2,099               | do 7...         | do .....             | From the lower level reservoir, McTavish Street.   |
| 41             | 2,100               | do 8...         | Ottawa River.....    | From floating pier, where new supply is to be taken, at depth of 10 feet, current is very strong here. Pieces of ice floating past, but the main ice is still on the river.                                    |
| 43             | 2,101               | do 8...         | Montreal.....        | From tap in No. 14 Fire Station, St. Dominique St. Supplied from high level reservoir  |
| 45             | 2,102               | do 8...         | do .....             | From tap No. 1 Fire Station, Craig street. Supplied from low level reservoir.  |
| 47             | 2,103               | do 11...        | do .....             | From tap in wheel-house of Montreal water works.   |
| 49             | Duplicate. 2,093    | do 12...        | do .....             | From tap in Inland Revenue Office Supplied from lower level reservoir, McTavish St.  |
| 51             | Duplicate. 2,097    | do 12...        | do .....             | From upper level reservoir, Montreal waterworks, Mount Royal Park.   |
| 53             | Duplicate. 2,101    | do 15...        | Ottawa River.....    | From river at Sault au Recollet, P. Q., above the rapids. This sample was taken under first span of the O. P. R. bridge, 1 or 2 feet under surface.  |
| 55             | 2,102               | do 15...        | do .....             | Taken from river at Sault au Recollet, below the second rapids, about 3 miles from where first sample (2,101) was taken, about a mile from Point Viau bridge, from centre of river, 1 or 2 feet under surface. |
| 57             | 2,103               | do 18...        | do .....             | Taken from centre of Ottawa River, above head of rapids, at St Anne's P. Q.  |
| 59             | 2,104               | do 18...        | do .....             | Taken from centre of Ottawa River, about a mile below rapids, 1 or 2 feet under surface.   |

TABLE I.

## CHRONOLOGICAL Tabulation of Samples.—Continued.

| Serial Number. | Collector's Number. | Date.       | Place of Collection.     | Conditions Obtaining at Time of Collection of Sample.  |
|----------------|---------------------|-------------|--------------------------|--|
|                |                     | 1890.       |                          |  |
| 17             | 9,105               | April 18... | Lake Two Moun-           | Taken opposite Forget's Point.   |
| 18             | 9,106               | do 18...    | tains.<br>Lake Two Moun- | Samples 9,105-6 where taken from under the ice, about 150 or 200 yards from the shore, a short distance from each other; man would not venture out any further owing to the condition of ice.  |
| 14             | 14<br>Ottawa.       | do 24...    | Ottawa River.....        | Opposite Calumet in main channel at depth of 10 feet; current very strong; large pieces of detached ice floating down.   |
| 15             | 15                  | do 24...    | do .....                 | At Grenville, near entrance to locks and in a strong current at a depth of about 6 to 10 inches.   |
| 16             | 16                  | do 24...    | do .. .....              | At Carillon, below the locks. Taken from a steam ferry in mid current, at depth of 8 to 10 feet, current very strong.  |
| 23             | 1<br>Montreal       | May 2..     | St. Lawrence River       | Sample taken from the head of the Cascade Rapids. Opposite the Cedars Island, the point being the old Government pier situated opposite the farm of one Henry Larne, 3 miles below Cedars Village and 300 feet from the Island, taken at a depth of 10 feet in water 25 feet deep, of a temperature of 42° F. A large amount of rain fell during the previous 36 hours; weather changeable; very high westerly wind. |
| 24             | 2                   | do 2...     | do                       | Sample taken from the lake below the Cascade Rapids, the point being a little below the mouth of the Beauharnois Canal—or, rather, opposite to it—at a distance of about one-third of a mile therefrom, taken at a depth of about 10 feet in water 60 feet deep, of a temperature of 42° F. Weather, &c., as described under No. 1.  |

**TABLE I.**  
**CHRONOLOGICAL Tabulation of Samples.—Continued.**

| Serial Number. | Collector's Number. | Date.             | Place of Collection. | Conditions Obtaining at Time of Collection of Sample.   |
|----------------|---------------------|-------------------|----------------------|---|
| 25             | 3                   | 1890.<br>May 3... | Lake St. Louis.....  | Sample obtained about midway between Thompson's Point and Lynch Island. Depth of water about 40 feet; temperature, 44° F. Heavy swell, strong S. W. wind, accompanied with rain, in the afternoon. Sample taken at a depth of 10 feet.              |
| 26             | 4                   | do 7...           | do .....             | Obtained from a point about 500 feet south-westerly from the head of Dorval Island, in water about 16 feet deep, of a temperature of 46° F., and at a depth of 8 feet. Weather clear, strong westerly wind; heavy rain during preceding three days. |
| 27             | 5                   | do 7...           | do .....             | From a point a little east of Lightship No. 2, in water 30 feet deep. Temperature 46° F., and at a depth of 10 feet.  |
| 28             | 6                   | do 7...           | do .....             | From a point about midway between Lightship No. 2 and the easterly end of St. Nicholas Island, in water about 24 feet deep, and of a temperature of 46° F., at a depth of 10 feet.  |
| 29             | 7                   | do 7...           | do .....             | From a point about 200 feet N. E. of St. Nicholas Island, in water 22 feet deep, of a temperature of 46° F., and at a depth of 10 feet.   |
| 30             | 8                   | do 8...           | do .....             | Sample taken outside of enclosing wall of Lachine Canal, about 30 feet therefrom, in water about 16 feet deep, of a temperature of 47° F., and at a depth of 8 feet. Weather clear and calm.  |
| 31             | 9                   | do 8...           | do .....             | Sample taken about midway from pier to Grand Trunk Railway station, at entrance of Lachine Canal, in water about 20 feet deep, and of a temperature of 47° F., and at a depth of 10 feet. Weather clear and calm.                                   |
| 32             | 10                  | do 8...           | do .....             | Sample taken in inland out near lower Lachine highway bridge, at a depth of 8 feet; water of a temperature of 48° F. Weather clear and calm.  |

TABLE II.—

| Serial Number. | Collector's Designation of Sample. | SOURCE OF SAMPLE.  | Date of Collection | COLOR.        |            |            |              |
|----------------|------------------------------------|--|--------------------|---------------|------------|------------|--------------|
|                |                                    |  |                    | Yellow (500). | Red (200). | Grey (50). | Green (700). |
| 11             | Ottawa..                           | Deschenes Lake, 1 mile off Aylmer.....                         | Mich. 25.          | .....         | .....      | .....      | .....        |
| 22             | do                                 | do Aylmer Bay † .....  | do 25              | .....         | .....      | .....      | .....        |
| 32             | do                                 | do head of Deschenes Rapids. ....                              | do 25              | 9 00          | 1 50       | 0 75       | .....        |
| 44             | do                                 | do Britannia Bay .....   | do 25              | .....         | .....      | .....      | .....        |
| 513            | do                                 | Ottawa River, C.P.R. Bridge, Ottawa .....                      | April 8            | 9 00          | 2 25       | 0 25       | .....        |
| 69             | do                                 | do Hull water supply .....                                     | Mich. 21           | .....         | .....      | .....      | .....        |
| 712            | do                                 | do tap at Laboratory.....                                      | April 3            | 8 00          | 1 25       | 0 75       | .....        |
| 86             | do                                 | do off Erncliffe.....  | Mich. 29           | .....         | .....      | .....      | .....        |
| 95             | do                                 | Rideau River, at Cummings' Bridge. ....                        | do 29              | 6 00          | 0 75       | 0 25       | .....        |
| 107            | do                                 | Ottawa do below New Edinburgh* .....                           | do 29              | .....         | .....      | .....      | .....        |
| 118            | do                                 | Gatineau do at Wright's Bridge .....                           | do 31.             | 5 00          | 1 00       | 0 25       | .....        |
| 1210           | do                                 | Ottawa do L'Ange Gardien .....                                 | April 2            | 8 00          | 1 00       | .....      | .....        |
| 1311           | do                                 | Lièvre do at Buckingham.....                                   | do 2               | 4 50          | 0 50       | 0 25       | .....        |
| 1414           | do                                 | Ottawa do off Calumet.....                                     | do 24              | 7 00          | 1 50       | 0 50       | .....        |
| 1515           | do                                 | do do at Grenville .....                                       | do 24              | 7 00          | 1 50       | 0 75       | .....        |
| 1616           | do                                 | do do at Carillon.....   | do 24              | .....         | .....      | .....      | .....        |
| 179106         | .....                              | Lake of Two Mountains, off Forget's Point .....                | do 18.             | 8 00          | 1 75       | 1 25       | .....        |
| 189108         | .....                              | do do do .....   | do 18.             | 7 50          | 1 75       | 0 50       | .....        |
| 199109         | .....                              | Ottawa River, above St. Ann's Rapid.....                       | do 18.             | 9 00          | 2 00       | 2 00       | .....        |
| 209104         | .....                              | do below do .....  | do 18              | 9 00          | 2 25       | 2 00       | .....        |
| 219101         | .....                              | do above Sault au Recollet.....                                | do 15              | 8 25          | 2 00       | 1 75       | .....        |
| 229102         | .....                              | do below do .....  | do 15.             | 9 00          | 2 00       | 1 00       | .....        |
| 231            | Montreal                           | St. Lawrence River, above Beauharnois Rapid.....               | May 2              | 1 00          | 0 50       | 0 25       | 0 75         |
| 242            | do                                 | do below do .....  | do 2.              | 1 00          | 0 50       | .....      | 1 00         |
| 253            | do                                 | Lake St. Louis, bet. Lynch Island and Thompson's Point ‡ ..... | do 3.              | 10 00         | 1 50       | 2 00       | .....        |
| 264            | do                                 | Lake St. Louis, head of Dorval's Island ¶ .....                | do 7.              | 8 00          | 1 75       | 2 00       | .....        |
| 275            | do                                 | do lightship bet. Dorval and St. Nicholas Islands § .....      | do 7               | 2 00          | 0 75       | 0 25       | 1 00         |
| 286            | do                                 | do between lightship and St. Nicholas Island .....             | do 7               | 0 75          | 0 25       | .....      | 1 00         |
| 297            | do                                 | do N E end St. Nicholas Island .....                           | do 7.              | 0 75          | 0 25       | .....      | 0 75         |
| 308            | do                                 | do outside Lachine Canal.....                                  | do 8.              | 10 00         | 2 00       | 1 50       | .....        |
| 319            | do                                 | do inside do .....   | do 8               | 9 50          | 1 75       | 2 00       | .....        |
| 3210           | do                                 | do inland cut.....   | do 8               | 8 00          | 2 00       | 1 25       | .....        |
| 339093         | .....                              | Tap, Inland Revenue Office, Montreal .....                     | April 6            | .....         | .....      | .....      | .....        |
| 349093         | .....                              | do do do .....   | do 12              | 6 50          | 1 75       | 1 00       | .....        |
| 359095         | .....                              | Tap at wheelhouse, Montreal .....                              | do 7               | .....         | .....      | .....      | .....        |
| 369096         | .....                              | do do .....  | do 11.             | 10 00         | 2 00       | 2 00       | .....        |
| 379097         | .....                              | Upper level reservoir, do .....                                | do 7               | .....         | .....      | .....      | .....        |
| 389097         | .....                              | do do .....  | do 12.             | 5 25          | 1 25       | .....      | .....        |
| 399098         | .....                              | Lower level reservoir, do .....                                | do 7               | 5 00          | 1 00       | .....      | .....        |
| 409099         | .....                              | No. 14 Fire Station, do .....                                  | do 8               | 6 00          | 0 75       | .....      | .....        |
| 419100         | .....                              | No. 1 do .....   | do 8.              | 6 00          | 1 25       | 0 25       | .....        |

\* Does not indicate sewage contamination.

† Previous Sewage contamination = 4800.

‡ " " " = 1000.

¶ " " " = 1500.

§ " " " = 800.

## Analytical results.

| Dry matter<br>Ignited.<br>Loss on<br>Ignition. | Parts p. M. | PHENOMENA ON IGNITION.     | NITROGEN.<br>(Parts per Million) |                                     |                             |               |          | Chlorine (parts<br>per<br>Million) | Phosphates (parts<br>per<br>Million). | Oxygen<br>Consumed<br>by Organic<br>Matter at<br>80° F. |    | Value | Serial Number. |
|--|-------------|----------------------------|----------------------------------|-------------------------------------|-----------------------------|---------------|----------|------------------------------------|---------------------------------------|---|----|-------|----------------|
|  |             |                            | As<br>Albuminoid<br>Ammonia.     | As Free and<br>Saline Am-<br>monia. | As Nitrates<br>and Nitrites | Parts p. Mil. |          |                                    |                                       |   |    |       |                |
|  |             |                            |                                  |                                     |                             | 15 m. 4 hrs.  |          |                                    |                                       |   |    |       |                |
| 100.00   | 44          | Blackened                  | 0.128                            | 0.002                               | 0.098                       | 1.80          | .....    | 3.388                              | 5.151                                 | 175   | 1  |       |                |
| 110.44   | 52          | do with scintillation      | 0.102                            | 0.026                               | 0.774                       | 4.00          | .....    | 3.815                              | 5.326                                 | 179   | 2  |       |                |
| 104.58   | 48          | do                         | 0.090                            | 0.005                               | 0.649                       | 1.50          | None.    | 3.472                              | 5.259                                 | 172   | 3  |       |                |
| 102.44   | 44          | do with scintillation      | 0.150                            | 0.070                               | 0.110                       | 5.50          | h. t.    | 2.172                              | 4.204                                 | 125   | 4  |       |                |
| 112.94   | 48          | do                         | 0.158                            | 0.008                               | 0.132                       | 1.00          | l. t.    | 3.040                              | 4.866                                 | 157   | 5  |       |                |
| 104.68   | 44          | do                         | 0.150                            | 0.026                               | 0.134                       | 1.50          | None.    | 3.245                              | 5.073                                 | 170   | 6  |       |                |
| 100.08   | 42          | do                         | 0.180                            | 0.004                               | 0.146                       | 1.50          | v. l. t. | 3.300                              | 4.051                                 | 156   | 7  |       |                |
| 96.50  | 40          | do                         | 0.180                            | 0.010                               | .....                       | .....         | v. l. t. | 3.441                              | 5.078                                 | 178   | 8  |       |                |
| 112.30   | 76          | do                         | 0.350                            | 0.030                               | 0.020                       | 2.00          | l. t.    | 2.956                              | 5.512                                 | 178   | 9  |       |                |
| 100.50   | 44          | do                         | 0.160                            | 0.001                               | 0.176                       | 1.50          | None.    | 2.663                              | 5.950                                 | 151   | 10 |       |                |
| 81.62  | 32          | do                         | 0.130                            | 0.005                               | 0.135                       | 1.00          | None.    | 2.792                              | 4.510                                 | 140   | 11 |       |                |
| 100.62   | 48          | do with scintillation      | 0.290                            | 0.014                               | 0.098                       | 1.50          | h. t.    | 2.832                              | 5.186                                 | 168   | 12 |       |                |
| 104.44   | 48          | do                         | 0.110                            | 0.010                               | 0.130                       | 1.50          | None.    | 2.306                              | 4.144                                 | 120   | 13 |       |                |
| 102.92   | 40          | do with scintillation      | 0.184                            | 0.012                               | 0.148                       | 1.00          | l. t.    | 3.000                              | 5.608                                 | 162   | 14 |       |                |
| 100.58   | 32          | do                         | 0.166                            | 0.006                               | 0.054                       | 1.00          | l. t.    | 3.040                              | 5.532                                 | 160   | 15 |       |                |
| 116.72   | 44          | do with scintillation      | 0.106                            | 0.006                               | 0.064                       | .....         | h. t.    | 3.040                              | 5.506                                 | 157   | 16 |       |                |
| 112.76   | 36          | do                         | 0.244                            | 0.036                               | 0.124                       | 1.50          | h. t.    | 2.932                              | 5.512                                 | 170   | 17 |       |                |
| 112.76   | 36          | do                         | 0.214                            | 0.078                               | 0.182                       | 1.50          | h. t.    | 2.948                              | 5.308                                 | 160   | 18 |       |                |
| 112.64   | 48          | do                         | 0.178                            | 0.064                               | 0.050                       | 1.50          | h. t.    | 2.908                              | 5.280                                 | 161   | 19 |       |                |
| 116.64   | 32          | do with much scintillation | 0.246                            | 0.019                               | 0.104                       | 1.50          | h. t.    | 2.932                              | 5.228                                 | 168   | 20 |       |                |
| 104.00   | 44          | do with scintillation      | 0.216                            | 0.026                               | 0.112                       | 1.50          | h. t.    | 2.828                              | 5.000                                 | 159   | 21 |       |                |
| 100.00   | 44          | do                         | 0.315                            | 0.017                               | 0.123                       | 1.50          | v. l. t. | 2.789                              | 5.080                                 | 169   | 22 |       |                |
| 102.76   | 36          | do                         | 0.227                            | 0.037                               | 0.073                       | 4.00          | h. t.    | 0.544                              | 1.260                                 | 58  | 23 |       |                |
| 120.72   | 56          | do                         | 0.162                            | 0.017                               | 0.233                       | 3.00          | h. t.    | 0.528                              | 1.392                                 | 70  | 24 |       |                |
| 72.40  | 32          | do                         | 0.238                            | 0.030                               | 0.520                       | 1.00          | h. t.    | 3.128                              | 5.688                                 | 174   | 25 |       |                |
| 76.40  | 36          | do                         | 0.234                            | 0.008                               | 0.482                       | 1.00          | h. t.    | 3.040                              | 5.512                                 | 172   | 26 |       |                |
| 100.78   | 52          | do                         | 0.152                            | 0.012                               | 0.368                       | 3.50          | h. t.    | 0.940                              | 1.868                                 | 68  | 27 |       |                |
| 100.00   | 42          | do                         | 0.130                            | 0.014                               | 0.190                       | 3.50          | h. t.    | 0.628                              | 1.260                                 | 51  | 28 |       |                |
| 100.00   | 60          | do                         | 0.102                            | 0.016                               | 0.294                       | 3.50          | h. t.    | 0.612                              | 1.348                                 | 58  | 29 |       |                |
| 92.40  | 28          | do                         | 0.174                            | 0.006                               | 0.124                       | 1.00          | h. t.    | 3.212                              | 5.756                                 | 172   | 30 |       |                |
| 72.00  | 32          | do                         | 0.140                            | 0.014                               | 0.128                       | 1.00          | h. t.    | 3.184                              | 5.744                                 | 167   | 31 |       |                |
| 84.44  | 40          | do                         | 0.154                            | 0.030                               | 0.110                       | 1.00          | h. t.    | 3.172                              | 5.728                                 | 165   | 32 |       |                |
| 100.40   | 40          | do                         | 0.154                            | 0.090                               | 0.130                       | 2.00          | v. l. t. | 2.624                              | 4.864                                 | 149   | 33 |       |                |
| 112.64   | 48          | do                         | 0.170                            | 0.000                               | 0.160                       | 2.50          | h. t.    | 2.680                              | 4.816                                 | 147   | 34 |       |                |
| 104.66   | 48          | do with scintillation      | 0.402                            | 0.038                               | 0.082                       | 2.50          | h. t.    | 2.772                              | 4.924                                 | 176   | 35 |       |                |
| 114.82   | 42          | do                         | 0.194                            | 0.016                               | 0.074                       | 3.00          | l. t.    | 2.028                              | 4.368                                 | 143   | 36 |       |                |
| 92.52  | 40          | do with much scintillation | 0.250                            | 0.002                               | 0.000                       | 3.00          | tr.      | 2.744                              | 4.780                                 | 155   | 37 |       |                |
| 100.66   | 44          | do with scintillation      | 0.180                            | 0.008                               | 0.142                       | 3.00          | l. t.    | 2.636                              | 4.600                                 | 142   | 38 |       |                |
| 100.00   | 40          | do with much scintillation | 0.194                            | 0.010                               | 0.110                       | 3.00          | h. t.    | 2.444                              | 4.264                                 | 137   | 39 |       |                |
| 118.44   | 52          | do with little do          | 0.104                            | 0.018                               | 0.152                       | 8.00          | tr.      | 2.732                              | 4.700                                 | 138   | 40 |       |                |
| 100.00   | 48          | do with scintillation      | 0.114                            | 0.030                               | 0.130                       | 4.00          | h. t.    | 2.720                              | 4.884                                 | 144   | 41 |       |                |

# REPORT ON THE ANALYSIS OF FORTY-ONE SAMPLES OF WATER FROM THE OTTAWA RIVER AND OTHER SOURCES, COLLECTED BETWEEN 25<sup>TH</sup> MARCH AND 8<sup>TH</sup> MAY, 1890.

In Table I the samples are arranged in the order of their collection as regards time.

In Table II the samples are arranged in a series, beginning at Lake Deschenes and ending with the Montreal water supply. In the following report the different samples are referred to by the serial numbers assigned to them in Table II.

The following is a synopsis of samples taken from each distinct source of supply :—

|                                     | No. of sample.                      |
|-------------------------------------|-------------------------------------|
| 1. Ottawa River—Deschenes Lake..... | 1 and 3.                            |
| Aylmer Bay.....                     | 2.                                  |
| Britannia.....                      | 4.                                  |
| The River proper.....               | 5, 6, 8, 10, 12, 14, 15, 16.        |
| 2. Lake of Two Mountains.....       | 17, 18, 19, 20, 21, 22.             |
| 3. St. Lawrence River.....          | 23 and 24.                          |
| 4. Lake St. Louis.....              | 25, 26, 27, 28, 29, 30, 31, 32.     |
| 5. Montreal water supply.....       | 33, 34, 35, 36, 37, 38, 39, 40, 41. |
| 6. Rideau River.....                | 9.                                  |
| 7. Gatineau River.....              | 11.                                 |
| 8. Lièvre River.....                | 13.                                 |
| 9. Ottawa City water.....           | 7.                                  |

Of these samples the following are selected to represent the Ottawa water proper in its course from Deschenes Lake to St. Anne's :—

|                                      | Sample.  | Date of Collection. |
|--------------------------------------|----------|---------------------|
| (Ottawa water in Deschenes Lake..... | 1 and 3  | 25th March.         |
| do at Hull intake .....              | 6        | 31st do             |
| do at C. P. R. bridge, Ottawa..      | 5        | 8th April.          |
| do off Ernschfle .....               | 8        | 29th March.         |
| do below New Edinburgh ...           | 10       | do                  |
| do at L'Ange Gardien .....           | 12       | 2nd April.          |
| do off Calumet .....                 | 14       | 24th do             |
| do at Grenville.....                 | 15       | 24th do             |
| do at Carillon.....                  | 16       | 24th do             |
| do Lake of Two Mountains.....        | 17 to 22 | 15th to 18th April. |

Since one object of the present investigation is to determine whether or not the Ottawa water materially changes in character through its course from Deschenes Lake to the Lake of Two Mountains, it will be well to study the results of analysis of the above samples, sixteen in number, apart. The remaining twenty-five

samples illustrate the character of the water supplies of certain localities, the tributaries of the Ottawa, &c., as follows :—

|  | Sample.   | Date of Collection |
|--|-----------|--------------------|
| Deschenes Lake—Aylmer Bay .....          | 2         | 25th March         |
| do Britannia Bay.....                    | 4         | do                 |
| Ottawa City supply .....                 | 7         | 3rd April.         |
| Rideau River, at Cummings' Bridge.....   | 9         | 29th March.        |
| Gatineau River, at Wright's Bridge.....  | 11        | 31st do            |
| Lièvre River, at Buckingham .....        | 13        | 2nd April.         |
| St. Lawrence River, at Beauharnois. .... | 23 and 24 | 2nd May.           |
| Lake St. Louis, at various points.....   | 25 to 32  | 3rd to 8th May.    |
| Montreal water supply .....              | 33 to 41  | 5th to 12th April. |

I have already mentioned that the period during which the samples were collected was one of marked and rapid change, for between 25th March and 8th May the ice unexpectedly broke up. The consequent influx of water from melting ice and snow, together with dissolved and suspended matter carried in by tributary streams, greatly affected the character of the river. It is necessary to bear this in mind when instituting comparisons between samples taken at different points along its course. Another important consideration to which I would draw attention is this: In a broad river like the Ottawa there are present, for a certain distance below each point of confluence of a tributary stream, parallel currents which differ more or less from each other as the water of the inflowing tributary differs from that of the main river. Complete intermixture throughout the whole breadth of the river not only does not occur at the point of confluence, but may not occur for miles below it. When covered by ice, and consequently unaffected on its surface by winds, this mingling of the waters is naturally more retarded than in summer when the river is open. In illustration of this I may quote samples 8 and 10, taken by myself on the same day, above and below the sewer mouths at New Edinburgh. The last-mentioned sample shows no change attributable to sewage contamination. The river is here very wide, and the exact location of the main current is unknown to me. The sample was taken as near the middle of the river as convenient, but the result of analysis shows that at this point the stream is not mixed with sewage.

Where samples are taken in open water, it is generally easy to collect in such a way as to make sure that no peculiarly local condition shall cause the sample to vary from the average standard of the main body of water at that point. If the sample be taken close to the shore, a very small rivulet or field drain may affect its quality, although without any important effect upon the main body of water in the river after thorough admixture has taken place. Again, samples taken from a land-locked bay will generally differ greatly

from the average character of the stream. Compare samples 2 and 4, taken in Aylmer and Britannia bays, with samples 1 and 3, which represent the main body of water in Deschenes Lake. Since the ultimate form taken by nitrogenous impurity in water is nitric acid in nitrates, nitrogen in nitrates should be a constantly increasing quantity as oxidation of organic matter proceeds. Exceptions to this increase of nitrogen as nitrates might occur: 1. Through great dilution owing to influx of tributary streams containing comparatively little nitrogen as nitrates; 2. Through the reduction of nitrates where presence of easily oxidisable matter and other conditions favoured such reduction. On the other hand, we should expect nitrogen as albuminoid ammonia to become less in quantity through oxidation as the river proceeds downward. The only samples which can be compared in these respects are given below:—

| Number and Place.                          | Albuminoid Nitrogen. | Nitrogen as Nitrates and Nitrites. |
|--|----------------------|------------------------------------|
| a. { No. 1.—Deschenes Lake.....            | 0.138                | 0.098                              |
| { No. 2.—do lower.....                     | 0.090                | 0.089                              |
| (3 miles.)                                 | Decrease 0.048       | Decrease 0.009                     |
| b. { No. 14.—Off Calumet.....              | 0.184                | 0.140                              |
| { No. 15.—Off Grenville.....               | 0.166                | 0.084                              |
| (3 miles.)                                 | Decrease 0.018       | Decrease 0.094                     |
| c. { No. 15.—Off Grenville.....            | 0.166                | 0.084                              |
| { No. 16.—Off Carillon.....                | 0.106                | 0.084                              |
| (12 miles.)                                | Decrease 0.060       | Increase 0.010                     |
| d. { No. 19.—Above Ste Anne's.....         | 0.178                | 0.056                              |
| { No. 20.—Below do.....                    | 0.246                | 0.104                              |
| (1 mile.)                                  | Increase 0.068       | Increase 0.048                     |
| e. { No. 21.—Above Sault au Recollect..... | 0.216                | 0.112                              |
| { No. 22.—Below do.....                    | 0.315                | 0.123                              |
| (3 miles.)                                 | Increase 0.099       | Increase 0.011                     |
| f. { No. 23.—Above Beauharnois.....        | 0.227                | 0.073                              |
| { No. 24.—Below do.....                    | 0.162                | 0.233                              |
| (4 miles.)                                 | Decrease 0.065       | Increase 0.160                     |

Each pair of samples above was collected on the same day, at points distant by the number of miles stated, and separated by rapid water, a condition favouring oxidation. In the first three



and in the last pairs we find a decrease of albuminoid nitrogen, as was to be expected. In *c* and *f*, where the distance is considerable, and the conditions very favourable to oxidation, we find the decrease very considerable, and attended by an increase in the nitrogen present as nitric acid, although in *c* this increase is not large. On the other hand, we find a marked increase in albuminoid nitrogen in *d* and *e*, a condition of things which cannot be explained, except on the assumption that the samples collected above and below did not represent the average character of the water of the river. This, of course, invalidates, to a certain extent, any conclusions which may be drawn from these samples, and must be carefully borne in mind in using them as illustration of the quality of the water of the lower Ottawa (Lake of Two Mountains). As regards increase of nitrogen in nitrates during downward progress of a stream, this is a matter of less consequence, since not only can we account upon intelligible grounds for a reversal of this order, but in the estimation of nitrogen in nitrates by the zinc-copper couple method we estimate along with it the nitrogen in nitrites, and these are exceedingly unstable compounds, so that their destruction with loss of nitrogen in presence of oxidisable organic matter is not surprising.

In the following table I have arranged those samples which represent the Ottawa river water in its course from Deschenes Lake to Lake of Two Mountains. I have taken the average results of samples 1 and 3, collected on the 25th March, to represent the water of Deschenes Lake, and the average of samples 17 to 22, collected 15th and 18th April, to represent the water of the Lake of Two Mountains. Two elements of uncertainty in regard to conclusions drawn from any comparison of these averages must be kept in mind. First, fully three weeks elapsed between the collections above and below, and these were weeks of rapid change, since during them the main ice on the river broke up, and that on the lakes became very rotten. Second, as pointed out on page 6, samples 19, 20, 21 and 22 show disagreement among themselves, so as to discredit their acceptance as typical of the water supply from which they are taken:—

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| No.             | Colour  |       | Solids. |              | Phenomena on Ignition. | Nitrogen. |                               |                  |                          | Chlorine. | Phosphate. | Oxygen Consumed. |          |       |       |
|-----------------|---------|-------|---------|--------------|------------------------|-----------|-------------------------------|------------------|--------------------------|-----------|------------|------------------|----------|-------|-------|
|                 | Yellow. | Red   | Grey.   | Dry at 100°C |                        | Ignited.  | Nitrogen.                     |                  |                          |           |            | 16 minutes.      | 4 hours. |       |       |
|                 |         |       |         |              |                        |           | As Albuminoid Ammonia.        | As Free Ammonia. | As Nitrites and Nitrates |           |            |                  |          |       |       |
| 1               | .....   | ..... | .....   | 80           | 36                     | 44        | Blackened                     | 0.138            | 0.002                    | 0.098     | 1.5        | .....            | .....    | 3.388 | 6.151 |
| 3               | 9.00    | 1.50  | 0.75    | 104          | 56                     | 48        | do                            | 0.090            | 0.006                    | 0.089     | 1.5        | None             | .....    | 3.472 | 6.359 |
| Mean.           | 9.00    | 1.50  | 0.75    | 92           | 46                     | 46        | Blackened                     | 0.114            | 0.004                    | 0.094     | 1.5        | None             | .....    | 3.430 | 6.205 |
| 6               | .....   | ..... | .....   | 100          | 56                     | 44        | Blackened                     | 0.160            | 0.026                    | 0.134     | 1.5        | None             | .....    | 3.248 | 6.072 |
| 5               | 9.00    | 2.25  | 0.25    | 112          | 64                     | 48        | do                            | 0.158            | 0.008                    | 0.132     | 1.5        | Light traces     | .....    | 3.060 | 4.886 |
| 8               | .....   | ..... | .....   | 95           | 56                     | 40        | do                            | 0.160            | 0.010                    | .....     | .....      | do               | .....    | 3.441 | 5.976 |
| 10              | .....   | ..... | .....   | 100          | 56                     | 44        | do                            | 0.160            | 0.004                    | 0.176     | 1.5        | None             | .....    | 2.863 | 5.950 |
| 12              | 6.00    | 1.00  | .....   | 100          | 52                     | 48        | do                            | 0.290            | 0.014                    | 0.096     | 1.5        | Heavy traces     | .....    | 2.832 | 5.186 |
| 14              | 7.00    | 1.50  | 0.50    | 92           | 52                     | 40        | do                            | 0.184            | 0.012                    | 0.148     | 1.00       | Light traces     | .....    | 3.000 | 5.608 |
| 15              | 7.00    | 1.50  | 0.75    | 88           | 56                     | 32        | do                            | 0.186            | 0.006                    | 0.054     | 1.00       | do               | .....    | 3.040 | 5.532 |
| 16              | .....   | ..... | .....   | 116          | 72                     | 44        | do                            | 0.106            | 0.006                    | 0.064     | .....      | Heavy traces     | .....    | 3.040 | 5.568 |
| 17              | 8.00    | 1.75  | 1.25    | 112          | 76                     | 36        | Blackened with scintillation. | 0.244            | 0.026                    | 0.124     | 1.5        | Heavy traces     | .....    | 2.832 | 5.512 |
| 18              | 7.50    | 1.75  | 0.50    | 112          | 76                     | 36        | do                            | 0.214            | 0.078                    | 0.182     | 1.5        | do               | .....    | 2.948 | 5.308 |
| 19              | 9.00    | 2.00  | 2.00    | 112          | 64                     | 48        | do                            | 0.176            | 0.064                    | 0.066     | 1.5        | do               | .....    | 2.908 | 5.280 |
| 20              | 9.00    | 2.25  | 2.00    | 116          | 84                     | 32        | do                            | 0.246            | 0.018                    | 0.104     | 1.5        | do               | .....    | 2.932 | 5.238 |
| 21              | 8.25    | 2.00  | 1.75    | 104          | 60                     | 44        | do                            | 0.216            | 0.029                    | 0.112     | 1.5        | do               | .....    | 2.828 | 5.000 |
| 22              | 9.00    | 2.00  | 1.00    | 104          | 60                     | 44        | do                            | 0.315            | 0.017                    | 0.123     | 1.5        | do               | .....    | 2.768 | 5.080 |
| Mean.           | 8.46    | 1.96  | 1.41    | 110          | 70                     | 40        | Blackened with scintillation. | 0.235            | 0.039                    | 0.117     | 1.5        | Heavy traces     | .....    | 2.889 | 5.221 |
| Mean of 17 & 18 | 7.75    | 1.75  | 0.87    | 112          | 76                     | 36        | Blackened with scintillation. | 0.229            | 0.062                    | 0.153     | 1.5        | Heavy traces     | .....    | 2.940 | 5.410 |

The mean of 17 and 18 does not, however, differ greatly from the mean of 17-22, except in the nitrogen as nitrates and nitrites. If we compare these means with those representing the water of Deschenes Lake, we find slightly less yellow and more red and grey in the colour. The total solids have increased, especially in the mineral component, the organic solids being less in quantity, an indication which is corroborated by the less amount of oxygen absorbed from permanganic acid. The chlorine remains unchanged, while the nitrogen as nitrates has increased considerably. Thus far the changes are altogether what might have been looked for. The increase of inorganic nitrogen is natural consequence of the oxidation of nitrogenous matter of less stable character. The scintillation observed on igniting the residual solids is probably caused by the presence of these nitrates. The decrease of oxidisable organic matter is a natural consequence of the oxidation which has been effected during the course of the river. The increased solids are probably due to the material carried into the river by tributary streams as these are swollen by melted snow and ice, as well as to the débris which has accumulated on the ice during winter now finding its way into the water. The only items which call for remark are the great increase of albuminoid nitrogen, the still greater increase of nitrogen in ammonia (an amount which is yet greater if we consider only samples 17 and 18), and the increase of phosphates. The presence of these last can scarcely otherwise be accounted for than as indicating animal excreta. Since they are present in traces only, and do not indicate the presence of sewage in other than a fully oxidized and therefore harmless condition, we may omit further consideration of them, since the drainage of Ottawa city, with that of towns and villages along the banks of the river, sufficiently accounts for their existence.

It is different, however, with the nitrogen as ammonia and albuminoid ammonia. That this, instead of decreasing, should have doubled in amount, and in the case of ammoniacal nitrogen have increased ten-fold, requires some explanation. These estimations were all made in duplicate, and closely agreeing results obtained. I conceive that the true explanation of this great increase of ammoniacal nitrogen is to be sought in the melting of the snow and ice on the river. Snow carries down with it ammonia from the air; this accumulates with the accumulation of the snow during the winter, and when spring opens is introduced at once into the water of the river, along with all the organic débris, microscopic organisms, &c., which are known to exist in snow and ice.

So far, then, as a comparaisou of the waters of Deschenes Lake with that of Lake of Two Mountains is possible from the result of this enquiry, I am not justified in saying that any deterioration has taken place. On the contrary, in spite of addition of organic débris from the breaking up of the ice, the water of the river has improved

as far as reduction of organic matter is concerned, the improvement being undoubtedly due to the aeration effected by rapids and cataracts on its course.

*Aylmer Bay* (Sample 2.)—The analysis shows slightly increased total solids; a very marked increase in nitrogen as ammonia, as albuminoid ammonia and as nitrates; chlorine in chlorides more than doubled, as compared with the average water of Deschenes Lake. It is the only sample, collected before the breaking up of the ice, which shows a sufficiently large amount of inorganic nitrogen to indicate previous sewage pollution when calculated upon Frankland's formula. These results are not surprising, when it is remembered that the water was taken from a hole in the ice used by carters who draw water for the town. The water was only about 4 feet deep, and the surface of the ice in the vicinity was thickly covered with straw and manure, the soluble portions of which must with every shower of rain, every thaw, and by the water spilled in filling the barrels, be washed into the bay, which at this point (only one hundred yards or so from shore) is almost land-locked. The use of such water for domestic purposes is certainly attended with great danger to health. It would appear to be an easy matter to enact police regulations which should compel the water-carriers to take water from a point much farther out from shore where the current would effect a constant change in the water; and also to insist upon the frequent change of place, that the droppings from the horses might not accumulate, to create a nuisance in the neighbourhood of the source of supply.

*Britannia Bay* (Sample 4.)—This, like the preceding sample, shows the influence of local causes in changing the character of a natural water supply. The solids, the nitrogen and the chlorine are all increased; heavy traces of phosphates appear, though none are found in the main body of lake water. The oxygen absorption is greatly decreased, owing, no doubt, to the undisturbed character of the water in the bay giving the suspended organic matters an opportunity to subside; possibly in part to their oxidation at the expense of nitrates, which are here very low as compared with the albuminoid and ammoniacal nitrogen. The ice was quite clean on the surface at this place, and the hole was protected by a wooden lid. Still the analysis shows that it would be better to go farther out into the lake. The water below the ice was little more than a foot in depth here.

*Ottawa City Supply* (Sample 7.)—This was taken from a tap at the laboratory of the Inland Revenue Department, the water having run freely for some hours before collecting the sample. Except in the matter of albuminoid nitrogen it shows no important variation from Deschenes Lake water collected some eight days earlier. In explanation of the increase of albuminoid nitrogen, we have the facts that the water came through the old wooden pipe in

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the aqueduct, and doubtless received additions by leakage; and that though no extensive break up of ice had yet occurred, certain amount of thaw was in progress. The matter oxidisable by permanganate is very much less than that found in the lake water, showing that oxidation had taken place to some extent in the course of the passage down the Deschenes rapids, and probably also in the system of pipes leading from the pumping station to the city.

*Tributaries of the Ottawa.*—Rideau River (Sample 9); Gatineau River (Sample 11); and Lièvre River (Sample 13). All of these show a much lighter colour than the water of the main river. The total solid matter is much higher in the Rideau, while in the Gatineau and Lièvre it is slightly lower than in the Ottawa. Again, while the Gatineau and Lièvre rivers show much the same results in nitrogen as the Ottawa, the Rideau gives very high albuminoid nitrogen, about three times as much as the Ottawa, the free ammonia also being high. In chlorine the Gatineau gives a lower and the Rideau a higher number than the Ottawa. The Rideau is the only one of the three which show traces of phosphates. In oxidisable organic matter the Rideau gives the highest amount, this being somewhat less than is found in the Ottawa itself; the Gatineau and Lièvre gives considerably less than the Ottawa.

On the whole, then, the Gatineau and Lièvre rivers are of a character to improve the main stream which receives them. The Rideau River, on the other hand, is a source of pollution to the Ottawa, and should certainly not be used for domestic purposes by people living near Cumming's Bridge where the sample analyzed was taken.

Samples 23 and 24 are taken from the St. Lawrence River opposite Beauharnois. The water of this river is entirely different from that of the Ottawa. The colour contains but little yellow and red, and a decided green component. The solids, especially the inorganic solids, are decidedly higher than in the Ottawa. The nitrogen is higher in the samples collected, but it is to be borne in mind that these were taken when the river contained the ice and snow contributed by the spring thaw. It should be compared, therefore, with samples 14 to 22, when it will be found not inferior to Ottawa water at nearly the same date. The past-sewage contamination is higher (as might be expected), as seen not only in the high nitrogen in nitrates, but in the chlorides and phosphates. The organic matter oxidisable by permanganate is, on the contrary, very much less than that in the Ottawa, being, in fact, only about one-fifth to one-fourth of the amount. The character of the St. Lawrence and Ottawa waters are so distinct that it will be easy to identify each in the water of Lake St. Louis which receives both rivers.

*Lake St. Louis.*—An examination of the results of analysis of

samples 25 to 32 shows that of these 25, 26, 30 31 and 32 are practically Ottawa river water, while 28 and 29 are St. Lawrence river water, and 27 is a mixture of the two in which St. Lawrence water greatly predominates. Since the matter oxidisable by permanganate is one of the most sharply defined characters by which these rivers may be distinguished, it is in the columns containing the results of this estimation that the distinction is most clearly seen; still the colour, the total solids and the chlorine determinations emphasize the indication of the oxygen absorption.

*Montreal Water Supply.*—Samples 33 to 41 represent Montreal City water, as collected at the points named from the 5th to the 12th of April. It is evident that this supply is taken essentially from the Ottawa river. This appears from the colour, the total solids and the large oxygen absorption. An important variation as compared with the river water proper, occurs in the chlorine content. This change is probably due to the reservoir system; at least no other explanation suggests itself to me. In samples 37 to 39, taken directly from the reservoirs, the chlorine in chlorides is three times as high as that found in the Ottawa water of Lake St. Louis. And if it be said that this was collected about a month later, when the volume of water had greatly increased, then a comparison with samples 5, 7 and 17 to 22 will show that at about the same date the Montreal reservoirs contained double the chlorides found in the Ottawa river. The exceptionally high chlorine of samples 40 and 41 may possibly be of purely local origin.

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No. 1.—SCHEDULE SHOWING THE WORK OF TURBINE No. 1.

| MONTHS<br>1890.       | Time<br>of<br>pumping. | Revolu-<br>tions. | Gallons<br>pumped. | Pressure in air<br>vessel. | Castor<br>Oil. | Tallow. | Coal Oil. | Cotton<br>Waste. | Coal for<br>heating. |
|-----------------------|------------------------|-------------------|--------------------|----------------------------|----------------|---------|-----------|------------------|----------------------|
|                       | Hrs. M.                |                   |                    |                            |                |         |           |                  |                      |
| IN POUNDS.            |                        |                   |                    |                            |                |         |           |                  |                      |
| January.....          | 740.30                 | 571,556           | 133,172,548        | 75.00                      | 139.50         | .....   | 195.00    | 26.50            | 106,480              |
| February.....         | 672.00                 | 499,847           | 116,464,351        | 76.00                      | 126.00         | .....   | 154.00    | 25.25            | 75,820               |
| March.....            | 744.00                 | 601,139           | 140,065,387        | 78.00                      | 139.50         | 40.00   | 163.00    | 25.25            | 74,280               |
| April.....            | 720.00                 | 617,874           | 143,964,642        | 77.00                      | 135.00         | 25.00   | 139.00    | 26.50            | 74,320               |
| May.....              | 740.20                 | 635,813           | 148,144,429        | 76.00                      | 139.50         | 40.00   | 124.00    | 25.62            | 35,390               |
| June.....             | 706.25                 | 620,112           | 144,486,096        | 76.00                      | 135.00         | 45.00   | 120.00    | 25.50            | .....                |
| July.....             | 572.50                 | 389,567           | 90,769,111         | 78.00                      | 105.75         | .....   | 132.00    | 23.00            | .....                |
| August.....           | 697.20                 | 501,167           | 116,771,911        | 75.00                      | 130.50         | .....   | 147.00    | 28.87            | .....                |
| September.....        | 710.00                 | 615,359           | 143,378,647        | 74.00                      | 135.00         | 40.00   | 153.00    | 23.38            | .....                |
| October.....          | 684.00                 | 511,388           | 119,153,404        | 77.00                      | 128.12         | 35.00   | 176.00    | 26.00            | 72,920               |
| November.....         | 586.00                 | 516,720           | 120,395,760        | 75.00                      | 112.50         | .....   | 145.00    | 22.00            | 76,180               |
| December.....         | 720.00                 | 577,265           | 134,502,745        | 77.00                      | 139.50         | .....   | 184.00    | 27.81            | 87,290               |
| Total.....            | 8293.25                | 6,657,807         | 1,551,269,031      | .....                      | 1,565.87       | 225.00  | 1,852.00  | 305.68           | 602,680              |
| Average.....          | .....                  | .....             | .....              | 76 00                      | .....          | .....   | .....     | .....            | .....                |
| Last year (1889)..... | 8293 35                | 5,936,531         | 1,383,211,723      | .....                      | 1,539.00       | 256.00  | 1,803 00  | 323.43           | 547,130              |
| Average “.....        | .....                  | .....             | .....              | 84.00                      | .....          | .....   | .....     | .....            | .....                |

No. 2—SCHEDULE SHOWING THE WORK OF THE BREAST WHEEL No. 2 AND TURBINES Nos. 3 AND 4.

| MONTHS.<br>1890  | Time of pumping |          |          | Revolutions. |               |            |               | Gallons pumped. | Pressure in air vessel. | In pounds.  |           |               |
|------------------|-----------------|----------|----------|--------------|---------------|------------|---------------|-----------------|-------------------------|-------------|-----------|---------------|
|                  | Breast wheel    |          | Turbine. |              | Breast wheel. | Turbine.   |               |                 |                         | Castor Oil. | Coal Oil. | Cotton waste. |
|                  | No. 2.          |          | No. 3    |              |               | No. 4.     |               |                 |                         |             |           |               |
|                  | Hrs. M.         | Hrs. M.  | Hrs. M.  | Hrs. M.      |               | No. 2      | No. 3.        |                 |                         |             |           |               |
| January.....     | 742 00          | 585 50   | 689 05   | 572,382      | 381,237       | 879,667    | 216,787,834   | 76 00           | 228 00                  | 195 00      | 32 75     |               |
| February.....    | 672 00          | 65 00    | 424 15   | 513,041      | 31,341        | 455,899    | 119,775,850   | 76 00           | 112 50                  | 154 00      | 29 25     |               |
| March.....       | 730 00          | 391 00   | 702 40   | 567,632      | 296,196       | 954,585    | 209,940,854   | 77 00           | 211 50                  | 163 00      | 29 75     |               |
| April.....       | 720 00          | 720 00   | 720 00   | 580,260      | 539,165       | 1,029,617  | 257,181,962   | 75 00           | 270 00                  | 139 00      | 50 75     |               |
| May.....         | 732 45          | 736 50   | 744 00   | 576,471      | 574,530       | 1,082,960  | 263,482,708   | 75 00           | 279 00                  | 124 00      | 31 75     |               |
| June.....        | 658 20          | 688 15   | 710 50   | 527,547      | 554,639       | 1,058,230  | 251,171,308   | 75 00           | 270 00                  | 120 00      | 29 75     |               |
| July.....        | 405 10          | 506 50   | 590 35   | 302,343      | 335,854       | 707,322    | 155,282,842   | 77 00           | 184 50                  | 132 00      | 25 78     |               |
| August.....      | 571 25          | 458 25   | 701 10   | 386,621      | 307,801       | 862,661    | 176,961,560   | 76 00           | 227 50                  | 147 00      | 30 00     |               |
| September.....   | 616 10          | 709 00   | 710 00   | 463,161      | 566,184       | 978,410    | 236,486,320   | 74 00           | 254 25                  | 153 00      | 31 00     |               |
| October.....     | 351 00          | 684 00   | 684 00   | 60,605       | 487,155       | 821,568    | 181,323,321   | 75 00           | 202 50                  | 176 00      | 20 00     |               |
| November.....    | .....           | 585 40   | 585 40   | .....        | 500,289       | 829,360    | 145,367,732   | 75 00           | 144 00                  | 145 00      | 27 00     |               |
| December.....    | .....           | 702 00   | 720 00   | .....        | 501,991       | 873,846    | 149,880,424   | 76 00           | 162 00                  | 184 00      | 26 18     |               |
| Total.....       | 5,198 50        | 6,832 50 | 7,982 15 | 4,750,063    | 5,099,382     | 10,534,128 | 2,363,653,728 | .....           | 2,545 75                | 1,832 00    | 319 93    |               |
| Average.....     | .....           | .....    | .....    | .....        | .....         | .....      | .....         | 76 00           | .....                   | .....       | .....     |               |
| Last year (1889) | 7,124 10        | 1,792 45 | 7,229 35 | 5,563,654    | 3,461,561     | 8,929,955  | 2,099,668,038 | .....           | 2,254 31                | 1,801 00    | 320 30    |               |
| Average.....     | .....           | .....    | .....    | .....        | .....         | .....      | .....         | 83 00           | .....                   | .....       | .....     |               |



No. 3.—SCHEDULE SHOWING THE WORK OF STEAM ENGINE No. 1.

| MONTHS<br>1890.    | Pump-<br>ing time. | Revolu-<br>tions. | Gallons<br>pumped. | Coal used in lbs.        |                                   |       | Pressure in air vessel. | Castor<br>Oil. | Cylinder<br>Oil. | Seal<br>Oil. | Coal<br>Oil. | Cotton<br>waste. |  |
|--------------------|--------------------|-------------------|--------------------|--------------------------|-----------------------------------|-------|-------------------------|----------------|------------------|--------------|--------------|------------------|--|
|                    |                    |                   |                    |                          |                                   |       |                         |                |                  |              |              |                  |  |
|                    | For<br>pumping     |                   |                    | For<br>banking<br>fires. | To raise<br>1,000,000<br>gallons. |       |                         |                |                  |              |              |                  |  |
| IN POUNDS.         |                    |                   |                    |                          |                                   |       |                         |                |                  |              |              |                  |  |
| January .....      | 140.45             | 121,897           | 67,043,350         | 211,170                  | 28,800                            | 3,579 | 77                      | 56.25          | 224.00           | 35.50        | 64.00        | 25.75            |  |
| February .....     | 332.05             | 276,395           | 152,017,250        | 497,600                  | 53,510                            | 3,625 | 77                      | 105.75         | 288.00           | 35.50        | 56.00        | 16.00            |  |
| March .....        | 217.05             | 177,955           | 97,875,250         | 332,730                  | 42,640                            | 3,835 | 77                      | 81.00          | 176.00           | 44.25        | 64.00        | 12.00            |  |
| April .....        | .....              | .....             | .....              | .....                    | .....                             | ..... | .....                   | .....          | .....            | .....        | .....        | .....            |  |
| May .....          | 19.00              | 15,677            | 8,622,350          | 28,410                   | 6,660                             | 4,068 | 80                      | 9.01           | 16.00            | .....        | .....        | 10.00            |  |
| June .....         | 136.35             | 113,402           | 62,371,100         | 210,950                  | 26,690                            | 3,810 | 81                      | 47.25          | 112.00           | .....        | 16.00        | 15.00            |  |
| July .....         | 483.30             | 372,603           | 204,931,650        | 638,090                  | 25,350                            | 3,237 | 78                      | 96.75          | 312.00           | 44.25        | 112.00       | 16.25            |  |
| August .....       | 429.30             | 350,507           | 192,778,850        | 599,610                  | 29,050                            | 3,261 | 75                      | 83.25          | 280.00           | 44.37        | 96.00        | 7.00             |  |
| September .....    | .....              | .....             | .....              | .....                    | .....                             | ..... | .....                   | .....          | .....            | .....        | .....        | .....            |  |
| October .....      | 343.50             | 268,360           | 147,598,000        | 487,010                  | 20,710                            | 3,440 | 76                      | 81.25          | 241.00           | 53.25        | 136.00       | 10.00            |  |
| November .....     | 244.10             | 176,224           | 96,923,200         | 300,410                  | 24,550                            | 3,353 | 73                      | 51.66          | 176.00           | 35.50        | 112.00       | 14.00            |  |
| December .....     | 189.05             | 147,239           | 80,981,450         | 266,300                  | 30,000                            | 3,659 | 76                      | 40.50          | 152.00           | 35.50        | 48.00        | 12.00            |  |
| Total .....        | 2,535.35           | 2,020,259         | 1,111,142,450      | 3,572,280                | 287,960                           | ..... | .....                   | 652.66         | 1,977.00         | 328.12       | 704.00       | 138.00           |  |
| Daily average..    | .....              | .....             | .....              | .....                    | .....                             | 3,860 | 77                      | .....          | .....            | .....        | .....        | .....            |  |
| Total last year 89 | 2,515.20           | 2,001,275         | 1,100,701,250      | 3,866,890                | 310,330                           | ..... | .....                   | 96.81          | 2,232.00         | 333.62       | 928.00       | 170.13           |  |
| Daily average..    | .....              | .....             | .....              | .....                    | .....                             | 3,795 | 83                      | .....          | .....            | .....        | .....        | .....            |  |

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| January | February | March       | April     | May     | June  | July | August | September | October | November | December | Total  | Average | Last year, 1889 | Average |
|---------|----------|-------------|-----------|---------|-------|------|--------|-----------|---------|----------|----------|--------|---------|-----------------|---------|
| 4 30    | 2,717    | 1,184,612   | 6,870     | 2,160   | 7,023 | 75   | 75     | 75        | 75      | 75       | 75       | 128.16 | 75      | 58.44           | 75      |
| 0.40    | 236      | 102,896     | 200,300   | 16,916  | 6,637 | 75   | 75     | 75        | 75      | 75       | 75       | 2.25   | 75      | 58.44           | 75      |
| 117.10  | 75,059   | 32,725,724  | 42,690    | 4,060   | 6,265 | 75   | 75     | 75        | 75      | 75       | 75       | 24.75  | 75      | 58.44           | 75      |
| 26.20   | 17,115   | 7,462,140   | 360,370   | 41,330  | 5,773 | 75   | 75     | 75        | 75      | 75       | 75       | 9.00   | 75      | 58.44           | 75      |
| 214.45  | 159,582  | 69,577,752  | 77,930    | 11,540  | 4,713 | 75   | 75     | 75        | 75      | 75       | 75       | 45.00  | 75      | 58.44           | 75      |
| 62.30   | 43,544   | 18,985,184  | 188,160   | 28,220  | 4,900 | 75   | 75     | 75        | 75      | 75       | 75       | 9.00   | 75      | 58.44           | 75      |
| 156.30  | 101,272  | 44,154,592  | 246,660   | 28,990  | 4,951 | 75   | 75     | 75        | 75      | 75       | 75       | 15.66  | 75      | 58.44           | 75      |
| 171.30  | 127,607  | 55,636,652  | 1,122,980 | 133,210 | 5,465 | 75   | 75     | 75        | 75      | 75       | 75       | 22.50  | 75      | 58.44           | 75      |
| 773.55  | 527,132  | 229,829,652 | 1,122,980 | 133,210 | 5,465 | 75   | 75     | 75        | 75      | 75       | 75       | 128.16 | 75      | 58.44           | 75      |
| 382.50  | 253,776  | 110,646,336 | 567,890   | 81,280  | 5,867 | 75   | 75     | 75        | 75      | 75       | 75       | 58.44  | 75      | 58.44           | 75      |
|         |          |             |           |         |       |      |        |           |         |          |          |        |         |                 |         |

# No 6--SCHEDULE. Montreal Water Works, Low Level pumping station, Gallons pumped 1890.

| MONTHS<br>1890. | By Water Power. |              |              |              | By Steam Power. |               | Total for each month. |               |                      | Per-centage |           | Average level of water. |                      |
|-----------------|-----------------|--------------|--------------|--------------|-----------------|---------------|-----------------------|---------------|----------------------|-------------|-----------|-------------------------|----------------------|
|                 | By Water Power. |              |              |              | By Steam Power. |               | Total for each month. |               |                      | Per-centage |           |                         |                      |
|                 | Wheel No. 1.    | Wheel No. 2. | Wheel No. 3. | Wheel No. 4. | Engine No. 1.   | Engine No. 3. | By water.             | By steam.     | By water & by steam. | By water.   | By steam. |                         | At head of Aqueduct. |
| January...      | 133,172,548     | 84,712,536   | 56,423,076   | 75,652,222   | 67,043,350      | .....         | 349,960,382           | 67,043,350    | 417,003,732          | 83.92       | 16.08     | 38.96                   | 36.00                |
| February ..     | 116,464,351     | 75,930,068   | 4,638,468    | 39,207,314   | 152,017,250     | .....         | 236,240,201           | 152,017,250   | 388,257,451          | 60.84       | 39.16     | 38.56                   | 36.00                |
| March .....     | 140,065,387     | 84,009,536   | 43,837,008   | 82,094,310   | 97,875,250      | 1,184,612     | 350,006,241           | 98,059,862    | 448,066,103          | 77.94       | 22.06     | 38.99                   | 36.34                |
| April .....     | 143,964,642     | 85,878,480   | 82,756,420   | 88,547,062   | .....           | .....         | 401,146,604           | .....         | 401,146,604          | 100.00      | .....     | 40.27                   | 37.36                |
| May .....       | 148,144,429     | 85,317,708   | 85,030,440   | 93,134,560   | 8,622,350       | .....         | 411,627,137           | 8,622,350     | 420,249,487          | 97.95       | 2.05      | 41.51                   | 37.25                |
| June .....      | 144,486,096     | 78,076,956   | 82,086,572   | 91,007,780   | 62,371,100      | 102896        | 395,657,404           | 62,473,996    | 458,131,400          | 86.36       | 13.64     | 41.71                   | 37.28                |
| July .....      | 90,769,111      | 44,746,764   | 49,706,392   | 60,829,697   | 204,931,650     | 32,725,724    | 246,051,959           | 237,657,374   | 483,709,333          | 50.87       | 49.13     | 40.02                   | 35.16                |
| August .....    | 116,771,911     | 57,219,908   | 45,554,548   | 74,189,104   | 192,778,850     | 7,462,140     | 293,735,471           | 200,240,990   | 493,976,461          | 59.46       | 40.54     | 39.14                   | 35.55                |
| September       | 143,378,647     | 68,547,828   | 83,795,232   | 84,143,260   | .....           | 69,577,752    | 379,864,967           | 69,577,752    | 449,442,719          | 84.52       | 15.48     | 38.99                   | 36.96                |
| October....     | 119,153,404     | 38,569,540   | 72,098,940   | 70,654,848   | 147,598,000     | 18,985,184    | 300,476,732           | 166,583,184   | 467,059,916          | 64.33       | 35.67     | 38.42                   | 36.56                |
| November..      | 120,395,760     | .....        | 74,042,772   | 71,324,960   | 96,923,200      | 44,154,592    | 265,763,492           | 141,077,792   | 406,841,284          | 65.32       | 34.68     | 38.50                   | 37.24                |
| December..      | 134,502,745     | .....        | 74,738,668   | 75,150,756   | 80,981,465      | 55,636,652    | 264,392,169           | 136,618,102   | 401,010,271          | 67.55       | 32.45     | 38.72                   | 36.00                |
| Total .....     | 1,551,269,031   | 703,009,324  | 754,708,536  | 905,935,868  | 1,111,142,450   | 229,829,552   | 3,914,922,759         | 1,340,972,002 | 5,255,894,761        | .....       | .....     | .....                   | .....                |
| Daily Aver.     | 4,250,652       | 1,926,052    | 2,067,695    | 2,482,016    | 3,044,226       | 629,670       | 10,725,816            | 3,673,896     | 14,399,712           | 74.49       | 25.51     | 39.48                   | 36.47                |
| Total, 1889.    | 1,383,211,731   | 823,380,536  | 512,311,026  | 763,976,474  | 1,10,0701,250   | 110,646,336   | 3,482,879,761         | 1,211,347,586 | 4,694,227,347        | .....       | .....     | .....                   | .....                |
| Daily Aver.     | .....           | .....        | .....        | .....        | .....           | .....         | 9,542,136             | 3,318,761     | 12,860,897           | 74.92       | 25.08     | 38.52                   | 36.32                |

No. 6.—SCHEDULE SHOWING THE WORK OF ENGINE No. 1 (WORTHINGTON) AT THE HIGH LEVEL PUMPING STATION.

| MONTHS<br>1890.        | Pump-<br>ing time. | Revolu-<br>tions. | Gallons<br>pumped. | Coal used in pounds. |                          |                                   | Average pressure<br>on<br>pump piston. | Castor<br>Oil | Valvo-<br>line. | Cotton<br>waste. |
|------------------------|--------------------|-------------------|--------------------|----------------------|--------------------------|-----------------------------------|--|---------------|-----------------|------------------|
|                        | Hrs. M.            |                   |                    | For<br>pumping       | For<br>banking<br>fires. | To raise<br>1,000,000<br>gallons. |  |               |                 |                  |
|                        |                    |                   |                    |                      |                          |                                   |  |               |                 |                  |
| January .....          | 142.00             | 212,762           | 2,553,144          | 27,163               | 2,471                    | 11,606                            | 100                                    | .....         | 68.00           | 20.00            |
| February .....         | .....              | .....             | .....              | .....                | .....                    | .....                             | .....                                  | .....         | .....           | .....            |
| March .....            | .....              | .....             | .....              | .....                | .....                    | .....                             | .....                                  | .....         | .....           | .....            |
| April .....            | .....              | .....             | .....              | .....                | .....                    | .....                             | .....                                  | .....         | .....           | .....            |
| May .....              | 50.00              | 50,634            | 607,608            | 12,135               | 2,526                    | 24,131                            | .....                                  | 2.00          | 29.00           | 6.00             |
| June .....             | 12.00              | 11,038            | 132,456            | 1,576                | 240                      | 13,710                            | 100                                    | 6.00          | 2 00            | .....            |
| July .....             | .....              | .....             | .....              | .....                | .....                    | .....                             | .....                                  | .....         | .....           | .....            |
| August .....           | .....              | .....             | .....              | .....                | .....                    | .....                             | .....                                  | .....         | .....           | .....            |
| September .....        | .....              | .....             | .....              | .....                | .....                    | .....                             | .....                                  | .....         | .....           | .....            |
| October .....          | .....              | .....             | .....              | .....                | .....                    | .....                             | .....                                  | .....         | .....           | .....            |
| November .....         | .....              | .....             | .....              | .....                | .....                    | .....                             | .....                                  | .....         | .....           | .....            |
| December .....         | .....              | .....             | .....              | .....                | .....                    | .....                             | .....                                  | .....         | .....           | .....            |
| Total .....            | 204.00             | 274,434           | 3,293,208          | 40,874               | 5,237                    | .....                             | .....                                  | 8.00          | 99.00           | 26.00            |
| Average .....          | .....              | .....             | .....              | .....                | .....                    | 14,001                            | 100                                    | .....         | .....           | .....            |
| Last year (1889) ..... | 56.30              | 128,476           | 1,541,712          | 8,581                | 1,665                    | .....                             | .....                                  | .....         | 25.00           | 8.00             |
| Average “ .....        | .....              | .....             | .....              | .....                | .....                    | 6,646                             | .....                                  | .....         | .....           | .....            |

No. 7.—SCHEDULE SHOWING THE WORK OF ENGINE NO. 2 (THE GILBERT) AT THE HIGH LEVEL PUMPING STATION.

| MONTHS.<br>1890.       | Pump-<br>ing time | Revolu-<br>tions. | Gallons<br>pumped. | Pressure in air vessel. | Coal used in pounds. |                          |                                   | Cylinder<br>Oil. | Cotton<br>waste |
|------------------------|-------------------|-------------------|--------------------|-------------------------|----------------------|--------------------------|-----------------------------------|------------------|-----------------|
|                        | Hrs. M.           |                   |                    |                         | For<br>pumping.      | For<br>banking<br>fires. | To raise<br>1,000,000<br>gallons. |                  |                 |
| January .....          | 97.45             | 201,967           | 9,694,416          | 116                     | 33,708               | 6,900                    | 4,189                             | 113.75           | 50              |
| February .....         | 114.15            | 239,722           | 11,506,656         | 118                     | 43,694               | 9,200                    | 4,597                             | 155.25           | 50              |
| March .....            | 131.45            | 271,686           | 13,040,928         | 120                     | 44,941               | 11,700                   | 4,343                             | 156.25           | 40              |
| April .....            | 113.30            | 247,315           | 11,871,120         | 120                     | 41,790               | 12,100                   | 4,540                             | 128.75           | 35              |
| May .....              | 156.45            | 339,308           | 16,286,784         | 120                     | 53,517               | 11,000                   | 3,961                             | 158.75           | 40              |
| June .....             | 146.30            | 309,214           | 14,842,272         | 115                     | 45,239               | 11,300                   | 3,809                             | 152.00           | 50              |
| July .....             | 172.00            | 389,178           | 18,680,544         | 100                     | 56,627               | 11,100                   | 3,611                             | 187.75           | 30              |
| August .....           | 160.30            | 379,989           | 18,239,472         | 100                     | 55,907               | 11,700                   | 3,707                             | 140.00           | 40              |
| September .....        | 145.30            | 342,537           | 16,441,776         | 190                     | 52,710               | 10,900                   | 3,869                             | 105.25           | 30              |
| October .....          | 167.00            | 373,884           | 17,916,432         | 100                     | 55,682               | 11,700                   | 3,754                             | 128.25           | 37              |
| November .....         | 146.00            | 340,495           | 16,343,490         | 100                     | 50,240               | 11,800                   | 3,796                             | 132.75           | 30              |
| December .....         | 155.00            | 368,832           | 17,701,036         | 100                     | 53,344               | 12,000                   | 3,691                             | 123.75           | 30              |
| Total .....            | 1,706.30          | 3,804,127         | 182,597,826        | .....                   | 587,399              | 131,400                  | .....                             | 1,682.50         | 462             |
| Average .....          | .....             | .....             | .....              | 109                     | .....                | .....                    | 3,936                             | .....            | .....           |
| Last year (1889) ..... | 1,208.50          | 2,595,693         | 124,876,783        | .....                   | 348,622              | 96,800                   | .....                             | 1,086.75         | 455             |
| Average .....          | .....             | .....             | .....              | 115                     | .....                | .....                    | 3,567                             | .....            | .....           |

No. 8.—Schedule showing the depth of water, the rain fall and the average temperature at 9 a. m. at McTavish St. Reservoir.

| MONTHS<br>1890.      | Average monthly<br>depth in feet. | Rain gauges, in inches. |        |                             |                | Average temperature<br>at 9 a. m. |
|----------------------|-----------------------------------|-------------------------|--------|-----------------------------|----------------|-----------------------------------|
|                      |                                   | Rain.                   | Snow.  | Snow<br>reduced<br>to rain. | Total<br>rain. |                                   |
| January .....        | 22.43                             | 1.63                    | 28.25  | 2.26                        | 3.89           | 15                                |
| February .....       | 22.27                             | 2.41                    | 36.00  | 2.47                        | 4.88           | 19                                |
| March .....          | 22.54                             | 1.28                    | 9.25   | 1.15                        | 2.43           | 26                                |
| April .....          | 22.71                             | 1.19                    | 0.50   | 0.35                        | 1.54           | 43                                |
| May .....            | 22.32                             | 4.25                    | .....  | .....                       | 4.25           | 53                                |
| June .....           | 21.70                             | 2.49                    | .....  | .....                       | 2.49           | 65                                |
| July .....           | 18.97                             | 2.39                    | .....  | .....                       | 2.39           | 69                                |
| August .....         | 21.01                             | 7.65                    | .....  | .....                       | 7.65           | 65                                |
| September .....      | 21.65                             | 3.18                    | .....  | .....                       | 3.18           | 57                                |
| October .....        | 13.94                             | 2.57                    | .....  | .....                       | 2.57           | 46                                |
| November .....       | 20.43                             | 0.97                    | 6.75   | 0.85                        | 1.82           | 35                                |
| December .....       | 22.36                             | 0.03                    | 24.00  | 2.22                        | 2.25           | 9                                 |
| Total 1890 .....     | 21.02                             | 30.04                   | 104.75 | 9.30                        | 39.34          | 41                                |
| Last year 1889 ..... | 19.68                             | 34.37                   | 101.00 | 10.95                       | 15.32          | 43                                |

**SCHEDULE No. 9.—REPAIRS &c., TO SERVICES.**

| Leaking over drains. | Couplings leaking | Brust in wall. | Cocks renewed | Wooden boxes replaced by iron ones. | Wooden boxes renewed where new footpath laid. | Services choked. | Old kind cocks replaced by pneumatic cocks. |
|----------------------|-------------------|----------------|---------------|-------------------------------------|---|------------------|---|
| 110                  | 46                | 57             | 50            | 306                                 | 550   | 94               | 18  |

| Frozen outside. | Frozen inside. | Frozen in wall. | False reports investigated. | Leak on services from various causes undefined. |
|-----------------|----------------|-----------------|-----------------------------|---|
| 1               | 90             | 74              | 37                          | 1018  |

|  |        |
|--|--------|
| New hydrants (old pattern) put in during year 1890 .....           | 2      |
| New hydrants (5 noz.) put in during year 1890 .....                | 99     |
| New patent hydrants in position up to January 1891 (3 noz.) .....  | 49     |
| New patent hydrants in position up to January 1891 (2 noz.) .....  | 495    |
| New patent hydrants (2 noz.) put in during year 1890 (new work).   | 51     |
| New patent hydrants in position up to January 1891 (5 noz.) .....  | 254    |
| Pneumatic valves put in during year 1890 (new work) .....          | 2692   |
| Pneumatic valves put in up to January 1891 (new work and repairs). | 12,965 |

**HYDRANTS FROZEN DURING YEAR COMMENCING JAN. 1ST 90 ENDING DEC. 31ST 90.**

| January. | February. | March. | December. | Total hydrants frozen.                   |
|----------|-----------|--------|-----------|--|
| 581      | 881       | 414    | 570       | 491 hydrants reported frozen 2444 times. |

No 9A.—Schedule showing the Repairs done to Main Pipes, Hydrants and Valves durin gyear

| POSITIONS.                             |        | Dates<br>1890. | Mains. | Valves. | Hydrants. | HOW REPAIRED.                         | Probable causes of   |
|--|--------|----------------|--------|---------|-----------|---------------------------------------|----------------------|
| Lagauchetière and Visitation .....     | Jan'y. | 26"            | .....  | .....   | .....     | Recaulked Joint.....                  | Joint blown out.     |
| Sherbrooke and Simpson .....           | "      | 2              | .....  | .....   | 1         | Put new valve .....                   | Valve worn out.      |
| Mount Royal and Champlain.....         | "      | 3              | .....  | .....   | 1         | " .....                               | " "                  |
| St. Antoine and Inspector .....        | "      | 4              | .....  | .....   | 1         | " .....                               | " "                  |
| Fullum (last hydrant) .....            | "      | 5              | .....  | .....   | 1         | " .....                               | " "                  |
| St. Catherine, East of Dezery .....    | "      | 6              | .....  | .....   | 1         | Recaulked Joint of hydrant.....       | Joint blown out.     |
| " opp. City Councillor .....           | "      | 9              | .....  | .....   | 1         | Put new valve .....                   | Valve worn out.      |
| Wellington and Murray .....            | "      | 10             | .....  | .....   | 1         | " .....                               | " "                  |
| Dorchester and Windsor .....           | "      | 12             | .....  | .....   | 1         | " .....                               | " "                  |
| St. Lawrence and Cuthbert.....         | "      | 13             | .....  | .....   | 1         | " .....                               | " "                  |
| St. James, East of Place d'Armes ..... | "      | 14             | .....  | .....   | 1         | " .....                               | " "                  |
| Mance, above Ontario .....             | "      | 15             | .....  | .....   | 1         | " .....                               | " "                  |
| Dorchester and Amherst. ....           | "      | 16 10"         | .....  | .....   | 1         | Recaulked Joint.....                  | Joint blown out.     |
| Burnside and Victoria .....            | "      | 17             | .....  | .....   | 1         | Put new Valve .....                   | Valve worn out.      |
| St. Patrick and Condé .....            | "      | 18             | .....  | .....   | 1         | " .....                               | " "                  |
| St. James and Fulford .....            | "      | 19             | .....  | .....   | 1         | " .....                               | " "                  |
| Cadieux, above Courville .....         | "      | 20             | .....  | .....   | 1         | " .....                               | " "                  |
| Notre-Dame and S. igneurs .....        | "      | 21 6"          | .....  | .....   | 1         | Stuffing box leaking, repacked valve. | Rod broken by frost. |
| William and McCord .....               | "      | 22             | .....  | .....   | 1         | Put new valve .....                   | Packing worn out.    |
| St. Jean-Baptiste and Pantaléon..      | "      | 23             | .....  | .....   | 1         | " .....                               | Valve worn out.      |
| Ann, South of Brennan .....            | "      | 24             | .....  | .....   | 1         | " .....                               | " "                  |
| Hypolite Street .....                  | "      | 27             | .....  | .....   | 1         | " .....                               | " "                  |
| Mc Gill and Lemoine .....              | "      | 29             | .....  | .....   | 1         | Reshipped rod .....                   | Rod broken by frost. |
| Mance, above Ontario .....             | "      | 30             | .....  | .....   | 1         | Recaulked joint of hydrant.....       | No bottom check.     |
| Maisonneuve and Mary Ann .....         | "      | 30             | .....  | .....   | 1         | Put new valve.....                    | Joint blown out.     |
| Plessis, above Rachel .....            | "      | 31             | .....  | .....   | 1         | " .....                               | Valve worn out.      |
| Notre-Dame and S. igneurs .....        | "      | 31 6"          | .....  | .....   | 1         | " .....                               | " "                  |

Shin



| St. James, near St. Lambert .....    | Jan'y. | 31 | .....         | 1 | Sludge cock thawed .....                   | Sludge frozen.               | ..... |
|--------------------------------------|--------|----|---------------|---|--|------------------------------|-------|
| Préfontaine Street .....             | "      | 31 | .....         | 1 | Put n. w. valve .....                      | Valve worn out.              | ..... |
| Dufresne and Notre-Dame .....        | "      | 31 | 4" .....      | 1 | Put new spindle .....                      | Screw of spindle worn out.   | ..... |
| Rousseau and Campeau .....           | Feb.   | 5  | .....         | 1 | Put new valve .....                        | Valve worn out.              | ..... |
| Dorchester and Wolfe .....           | "      | 7  | .....         | 1 | " .....                                    | " .....                      | ..... |
| Dorchester and Drummond .....        | "      | 13 | .....         | 1 | " .....                                    | " .....                      | ..... |
| Maple, above Roy .....               | "      | 14 | .....         | 1 | " .....                                    | " .....                      | ..... |
| Dorchester and Amherst .....         | "      | 17 | .....         | 1 | " .....                                    | " .....                      | ..... |
| Laval and Sherbrooke .....           | "      | 18 | .....         | 1 | " .....                                    | " .....                      | ..... |
| Block and Notre-Dame .....           | "      | 19 | .....         | 1 | " .....                                    | " .....                      | ..... |
| Dubord and Campau .....              | "      | 19 | .....         | 1 | Put in a new hydrant .....                 | Split by frost               | ..... |
| Stanley, above Dorchester .....      | "      | 20 | 4" main ..... | 1 | Put in a new piece .....                   | " .....                      | ..... |
| Alber, past Fulford .....            | "      | 21 | .....         | 1 | Put in a n. w. valve .....                 | Valve worn out.              | ..... |
| Fulford, corner Notre-Dame .....     | "      | 22 | 6" .....      | 1 | Put in a new spindle .....                 | Screw on spindle worn out.   | ..... |
| Ontario and St. Denis .....          | "      | 24 | .....         | 1 | Put in a new valve .....                   | Valve worn out.              | ..... |
| Signeurs, below St. Antoine .....    | "      | 25 | .....         | 1 | " .....                                    | Rod broken by frost.         | ..... |
| Plessis, above Rachel .....          | "      | 26 | .....         | 1 | " .....                                    | Valve worn out.              | ..... |
| St. Genevève and Dorchester .....    | "      | 27 | 4" .....      | 1 | Stuffing box leaking, repacked valve ..... | Packing worn out.            | ..... |
| Union Avenue and Dorchester .....    | "      | 28 | 6" .....      | 1 | " .....                                    | " .....                      | ..... |
| Sherbrooke and St. Denis .....       | "      | 28 | 6" .....      | 1 | " .....                                    | " .....                      | ..... |
| Stanley and Dorchester .....         | "      | 28 | 4" .....      | 1 | Put in n. w. spindle .....                 | Spindle broken (thread worn) | ..... |
| Jean and Clark .....                 | "      | 28 | .....         | 1 | Put in new valve .....                     | Valve cut by stones.         | ..... |
| St. Lawrence, ab. St. Jean-Bte ..... | March  | 3  | .....         | 1 | " .....                                    | Valve worn out.              | ..... |
| Papineau, above Sherbrooke .....     | "      | 4  | .....         | 1 | " .....                                    | " .....                      | ..... |
| Wellington and Dalhousie .....       | "      | 4  | .....         | 1 | " .....                                    | " .....                      | ..... |
| Ottawa and Prince .....              | "      | 5  | .....         | 1 | " .....                                    | " .....                      | ..... |
| Shearer and Mullin .....             | "      | 5  | .....         | 1 | " .....                                    | Rod broken by frost.         | ..... |
| Montcalm, above Dorchester .....     | "      | 6  | .....         | 1 | Took out old hydrant .....                 | Old one was too low.         | ..... |
| Allina and Laval .....               | "      | 6  | 6" main ..... | 1 | Recaulked joint .....                      | Joint blown out.             | ..... |
| St. Genevève, below Dorchester ..... | "      | 6  | 4" .....      | 1 | Put in new piece .....                     | Sunk and broken in cut made  | ..... |
| Albert, past Fulford .....           | "      | 6  | .....         | 1 | Put in new valve .....                     | Valve worn out. [for drain.  | ..... |
| Stanley and Dorchester .....         | "      | 6  | 4" .....      | 1 | " .....                                    | Old one worn out.            | ..... |
| Lagauchetière and St. Margaret ..... | "      | 7  | .....         | 1 | " .....                                    | Valve worn out.              | ..... |
| Dorchester and Maisonneuve .....     | "      | 8  | .....         | 1 | " .....                                    | " .....                      | ..... |
| Montcalm, above Dorchester .....     | "      | 10 | .....         | 1 | " .....                                    | " .....                      | ..... |

No 9A.—Schedule showing the Repairs done to Main Pipes, etc.—Continued.

| POSITIONS.                         | Dates<br>1890. | Mains. | Valves. | Hydrants. | HOW REPAIRED.          | Probable causes of injury. |
|------------------------------------|----------------|--------|---------|-----------|------------------------|----------------------------|
| Lusignan, North of Notre-Dame..    | March 10       | .....  | .....   | 1         | Put in new valve ..... | Valve worn out.            |
| St. Antoine, (last hydrant) .....  | " 11           | .....  | .....   | 1         | " " .....              | " "                        |
| Pine and St. Famille .....         | " 12           | .....  | .....   | 1         | " " .....              | " "                        |
| St. Lawrence and Mount Royal..     | " 13           | .....  | .....   | 1         | " " .....              | " "                        |
| St. James and St. Gabriel.....     | " 14           | .....  | .....   | 1         | " " .....              | " "                        |
| Fortier and St. Constant.....      | " 15           | .....  | .....   | 1         | " " .....              | " "                        |
| St. Alexander and Bernard.....     | " 17           | .....  | .....   | 1         | " " .....              | " "                        |
| Ottawa and Prince .....            | " 18           | .....  | .....   | 1         | " " .....              | " "                        |
| Bleury and Concord .....           | " 20           | .....  | .....   | 1         | " " .....              | " "                        |
| Guy, at Canal.....                 | " 22           | .....  | .....   | 1         | " " .....              | " "                        |
| Craig, at St. François-Xavier..... | " 23           | .....  | .....   | 1         | " " .....              | " "                        |
| Ontario, near St. Urbain.....      | " 24           | .....  | .....   | 1         | " " .....              | " "                        |
| Dorchester and Amherst.....        | " 25           | .....  | .....   | 1         | " " .....              | " "                        |
| Craig and Panet.....               | " 26           | .....  | .....   | 1         | Recaulked joint .....  | Joint blown out.           |
| William and McCord .....           | " 27           | .....  | .....   | 1         | " " .....              | " "                        |
| Notre-Dame and Parthenais. ....    | " 28           | .....  | .....   | 1         | Put new valve.....     | Valve worn out.            |
| St. Dominique, near Craig .....    | " 28 1/2       | .....  | .....   | 1         | Recaulked joint .....  | Joint blown out.           |
| St. Antoine, near Little Craig.... | " 29 1/2       | .....  | .....   | 1         | " " .....              | " "                        |
| Notre-Dame and Richmond .....      | April 3        | .....  | .....   | 1         | Put in new valve ..... | Head broken by frost.      |
| Notre-Dame and Parthenais .....    | " 4            | .....  | .....   | 1         | Recaulked joint.....   | Joint blown out.           |
| Canal and Etienne .....            | " 5            | .....  | .....   | 1         | Put in new valve ..... | Valve worn out.            |
| St. Antoine and Lusignan. ....     | " 7            | .....  | .....   | 1         | " " .....              | " "                        |
| Roy and Hypolite .....             | " 8            | .....  | .....   | 1         | " " .....              | " "                        |
| St. Constant, near Mignonne.....   | " 9            | .....  | .....   | 1         | " " .....              | " "                        |
| St. Urbain and St. Jean-Baptiste   | " 10           | .....  | .....   | 1         | " " .....              | " "                        |
| Cadieux and Roy .....              | " 10           | .....  | .....   | 1         | " " .....              | " "                        |
| St. Urbain, above Dorchester....   | " 10           | .....  | .....   | 1         | " " .....              | " "                        |

|                                    |       |    |       |       |       |                               |                            |
|------------------------------------|-------|----|-------|-------|-------|-------------------------------|----------------------------|
| Montmorenci and Canal.....         | April | 11 | ..... | ..... | ..... | Put in new valve.....         | Valve worn out.            |
| Laguachetiere and Margaret.....    | "     | 12 | ..... | ..... | ..... | "                             | "                          |
| St. Martin, below St. Antoine..... | "     | 14 | ..... | ..... | ..... | "                             | "                          |
| St. James and Dominion.....        | "     | 15 | ..... | ..... | ..... | "                             | "                          |
| Jacques Cartier above Dorchester   | "     | 16 | ..... | ..... | ..... | Put in a new piece.....       | Cause unknown              |
| Amherst and Rachel.....            | "     | 17 | ..... | ..... | ..... | Put new valve cover.....      | Broken by heavy load., &c. |
| Durocher Street.....               | "     | 18 | ..... | ..... | ..... | Recalculked joint.....        | Joint blown out.           |
| Sherbrooke, past Mark.....         | "     | 19 | ..... | ..... | ..... | Put in new valve.....         | Rod broken by frost.       |
| Dorchester and Windsor.....        | "     | 21 | ..... | ..... | ..... | "                             | "                          |
| Roy and Hypolite.....              | "     | 22 | ..... | ..... | ..... | "                             | Valve worn out.            |
| Baile and Mark.....                | "     | 23 | ..... | ..... | ..... | "                             | "                          |
| Dalhousie Square.....              | "     | 24 | ..... | ..... | ..... | "                             | "                          |
| Panel and Allard.....              | "     | 25 | ..... | ..... | ..... | Recalculked joint.....        | Joint blown out.           |
| Metcalfe, above Burns de.....      | "     | 26 | ..... | ..... | ..... | "                             | "                          |
| Fulum, above Ontario.....          | "     | 28 | ..... | ..... | ..... | "                             | "                          |
| St. Dominique, above Courville ..  | "     | 29 | ..... | ..... | ..... | "                             | "                          |
| Opp. 184 Amherst.....              | "     | 30 | ..... | ..... | ..... | "                             | "                          |
| Dorchester and St. Constant.....   | "     | 30 | ..... | ..... | ..... | "                             | "                          |
| Noire-Dame and Jacques-Cartier     | May   | 1  | ..... | ..... | ..... | Put in new valve.....         | Valve worn out.            |
| Ontario and Berr.....              | "     | 2  | ..... | ..... | ..... | "                             | "                          |
| Ontario, opp. McDonald's Factory   | "     | 3  | ..... | ..... | ..... | Recalculked joint.....        | Joint blown out.           |
| St. James, North of Victoria.....  | "     | 5  | ..... | ..... | ..... | Put in a piece.....           | Corroded through.          |
| Craig and St. Hubert.....          | "     | 6  | ..... | ..... | ..... | Put in new valve.....         | Valve worn out.            |
| Parthenais, at Female Jail.....    | "     | 7  | ..... | ..... | ..... | Recalculked joint.....        | Joint blown out.           |
| St. Catherine and St. Denis.....   | "     | 8  | ..... | ..... | ..... | Cutting out 10" not used..... | Pipe abandoned.            |
| St. Frs.-Xavier and S. Sacrament   | "     | 9  | ..... | ..... | ..... | Put in new valve.....         | Valve worn out.            |
| German, near Vitre.....            | "     | 10 | ..... | ..... | ..... | Recalculked joint.....        | Joint blown out.           |
| Roy and Drolet.....                | "     | 12 | ..... | ..... | ..... | Put in new valve.....         | Valve worn out.            |
| Dorchester, near Wolfe.....        | "     | 12 | ..... | ..... | ..... | "                             | "                          |
| Canning, below St. Antoine.....    | "     | 12 | ..... | ..... | ..... | "                             | "                          |
| Guy, South of William.....         | "     | 13 | ..... | ..... | ..... | "                             | "                          |
| Craig and Voltigeurs.....          | "     | 14 | ..... | ..... | ..... | "                             | "                          |
| St. James and Fulford.....         | "     | 14 | ..... | ..... | ..... | .....                         | .....                      |
| Aqueduct, at Crossing.....         | "     | 15 | ..... | ..... | ..... | Recalculked joint.....        | Joint blown out.           |
| Visitation and Logan.....          | "     | 16 | ..... | ..... | ..... | Put in new valve.....         | Valve worn out.            |

No. 9A.—Schedule showing the Repairs done to Main Pipes, Hydrants and Valves during year 1890.

| POSITIONS.                         | Dates<br>1890. | Mains.    | Valves. | Hydrants. | HOW REPAIRED.                         | Probable causes of injury.  |
|------------------------------------|----------------|-----------|---------|-----------|---------------------------------------|-----------------------------|
| Etienne and Canal.....             | May 17         | .....     | ...     | 1         | Put in new valve.....                 | Valve worn out.             |
| Rob'n Lane.....                    | " 18           | 4" .....  | ...     | ...       | Recaulked joint.....                  | Joint blown out.            |
| Osborne and Win'isor.....          | " 18           | 6" .....  | ...     | ...       | Cutting off connection from H. L. on  |                             |
| Opp. 108 Prince Street .....       | " 19           | 4" .....  | ...     | ...       | Recaulked joint.....[12" main.        | Joint blown out.            |
| St. Catherine, at McGill College.. | " 20           | 24" ..... | 1       | ...       | Put drain to valve chamber, no drain  |                             |
| Des'ry Street.....                 | " 21           | 4" .....  | 1       | ...       | Put new spindle.....[before.          | Thread worn off.            |
| St. Urbain, at Hôtel-Dieu.....     | " 22           | .....     | ...     | 1         | Recaulked joint.....                  | Joint blown out.            |
| St. Vincent and Thérèse .....      | " 23           | .....     | ...     | 1         | Put in new valve.....                 | Valve worn out.             |
| St. Félix, South of Albert.....    | " 23           | 4" .....  | ...     | ...       | Recaulked joint.....                  | Joint blown out.            |
| St. Jean-Baptiste and Hypolite...  | " 24           | .....     | ...     | 1         | Put in new valve.....                 | Valve worn out.             |
| Mill, near drinking Tap .....      | " 24           | 4" .....  | ...     | ...       | Put in new piece.....                 | Broken by frost.            |
| Sherbrooke, opposite Redpath.....  | " 25           | .....     | ...     | ...       | Took out hydrant.....                 | Hydrant opposite door.      |
| Wellington, corner St. Patrick...  | " 25           | .....     | ...     | 1         | Put in new valve.....                 | Valve worn out.             |
| Canal and Etienne.....             | " 26           | .....     | ...     | 1         | " .....                               | "                           |
| Amherst and Craig .....            | " 26           | 20" ..... | ...     | ...       | Recaulked joint.....                  | Joint blown out.            |
| Albert, at Masterman's .....       | " 27           | .....     | ...     | 1         | Put in new valve.....                 | Valve worn out.             |
| St. Constant and Ontario.. ..      | " 28           | 4" .....  | ...     | ...       | Recaulked joint.....                  | Joint blown out.            |
| Pine and Redpath .....             | " 29           | 12" ..... | ...     | ...       | Put in new piece ..../ .....          | Pi ce blown out.            |
| Mackay, above Dorchester ... ..    | " 29           | .....     | ...     | 1         | Put in new valve.....                 | Valve worn out.             |
| Dorchester, corner Papineau.....   | " 30           | .....     | ...     | ...       | Took away hydrant not required.....   |                             |
| Lagauchetière and Amherst .....    | " 30           | 6" .....  | 1       | ...       | Put in spindle.....                   | Spindle broken.             |
| Craig and Voltigeurs.....          | " 30           | 6" .....  | ...     | ...       | Recaulked joint... ..                 | Blown out.                  |
| Dalhousie, opp. 165 .....          | " 31           | 6" .....  | ...     | ...       | Put in new piece.....                 | Cause unknown.              |
| Richmond and William.....          | " 31           | 6" .....  | 1       | ...       | Stuffing box leaking repacked valve.. |                             |
| Hypolite and Courville .....       | June 2         | .....     | ...     | 1         | Put in new valve.....                 | Valve worn out.             |
| Dalhousie, below Ottawa.....       | " 3            | .....     | ...     | 1         | Recaulked joint.....                  | Joint (of hydt.) blown out. |
| Burnside and Peel.....             | " 4            | .....     | ...     | 1         | Put in new valve.....                 | Valve worn out.             |

|                                    |      |    |       |       |   |                                       |                             |
|------------------------------------|------|----|-------|-------|---|---------------------------------------|-----------------------------|
| Brock and Water.....               | June | 5  | ..... | ..... | 1 | Put in valve (new).....               | Valve worn out.             |
| Colborne and Common.....           | "    | 6  | 6"    | ..... | 1 | Recaulked joint.....                  | Joint blown out.            |
| Foundling and Port.....            | "    | 7  | ..... | ..... | 1 | Put in new column.....                | Broken by men demolishing   |
| Smith and Colborne .....           | "    | 8  | ..... | ..... | 1 | Recaulked joint.....                  | Joint blown out. [building. |
| Osborne and Cathedral .....        | "    | 9  | ..... | ..... | 1 | Put in new valve .....                | Valve worn out.             |
| St. Mathew and St. Catherine....   | "    | 15 | 6"    | ..... | 1 | Stuffing box leaking repacked valve.. |                             |
| McGil and Lemoine.....             | "    | 11 | ..... | ..... | 1 | Put in new valve.....                 | Joint blown out.            |
| Commissioners and Jac C. Square    | "    | 13 | ..... | ..... | 1 | "                                     | "                           |
| St. Aphonse lane .....             | "    | 14 | ..... | ..... | 1 | "                                     | "                           |
| Aqueduct, below Dorchester.....    | "    | 15 | ..... | ..... | 1 | "                                     | "                           |
| Dorchester and Drummond .....      | "    | 17 | ..... | ..... | 1 | Put in new hydrant.....               |                             |
| Opposite 409 Centre Str. et .....  | "    | 18 | 24"   | ..... | 1 | Put in new length of pipe.....        | Piece blown out.            |
| Dorchester, at Dominion Square.    | "    | 19 | ..... | ..... | 1 | Put in new valve.....                 | Valve worn out.             |
| Atwater Avenue, opposite Centre    | "    | 19 | 24"   | ..... | 1 | Recaulked joint.....                  | Joint blown out.            |
| St. Dominique and Dorchester ...   | "    | 19 | 4"    | ..... | 1 | "                                     | "                           |
| Opp. 95 Centre Street .....        | "    | 19 | 24"   | ..... | 1 | "                                     | "                           |
| Craig and Amburst .....            | "    | 20 | ..... | ..... | 1 | Rod replaced & valve.....             | No bottom check.            |
| Craig and Campeau.....             | "    | 20 | ..... | ..... | 1 | Renewed rod .....                     | Broken by rough usage.      |
| Craig and Jacques Cartier ...      | "    | 22 | ..... | ..... | 1 | "                                     | "                           |
| Mignonne and St. Constant.....     | "    | 22 | ..... | ..... | 1 | "                                     | "                           |
| Richmond. at Crossing .....        | "    | 23 | 4"    | ..... | 1 | Recaulked joint.....                  | Joint blown out.            |
| Maple, at Roy .....                | "    | 23 | ..... | ..... | 1 | Put in new valve.....                 | Valve worn out.             |
| Ottawa and Colborne .....          | "    | 24 | ..... | ..... | 1 | "                                     | "                           |
| Jac. Cartier and Lagauchetière...  | "    | 24 | 4"    | ..... | 1 | Put in a new spindle.....             | Spindle worn out.           |
| Crescent, above Dorchester .....   | "    | 25 | ..... | ..... | 1 | Put in new valve .....                | Valve worn out.             |
| McCord Street. ....                | "    | 25 | ..... | ..... | 1 | "                                     | "                           |
| Papineau Av., off St. Catherine... | "    | 25 | 6"    | ..... | 1 | Recaulked joint.....                  | Joint blown out.            |
| Wellington and Magdalen .....      | "    | 26 | 12"   | ..... | 1 | "                                     | "                           |
| St Elizabeth and Ontario.....      | "    | 21 | 4"    | ..... | 1 | Stuffing box leaking repacked valve.. | Packing worn out.           |
| Notre-Dame and Inspector .....     | "    | 26 | ..... | ..... | 1 | Put in new valve.....                 | Valve worn out.             |
| Opp. 94 Centre Street.....         | "    | 26 | 24"   | ..... | 1 | Recaulked joint.....                  | Joint blown out.            |
| Lemoine and McGill .....           | "    | 26 | ..... | ..... | 1 | Put in new hydrant.....               | Old one defective, (age).   |
| Sherbrooke and Metcalf .....       | "    | 26 | ..... | ..... | 1 | Look out hydrant.....                 | Not used.                   |
| Opp. 772 Napoléon.....             | "    | 26 | 10"   | ..... | 1 | Put in new piece.....                 | Piece blown.                |
| St. Antoine and Margaret .....     | "    | 17 | ..... | ..... | 1 | Put in new valve.....                 | Valve worn out.             |

N o. 9A.—Schedule showing the Repairs done to Main Pipes, Hydrants and Valves during year 1890.

| POSITIONS.                          | Dates<br>1890. | Mains.    | Valves. | Hydrants. | HOW REPAIRED.                         | Probable causes of injury.    |
|-------------------------------------|----------------|-----------|---------|-----------|---------------------------------------|-------------------------------|
| Notre-Dame and Versailles ..        | .....          | .....     | .....   | 1         | Put in new valve.....                 | Valve worn out. [sewer cut.   |
| St. Denis, near Vitré.....          | .....          | 10" ..... | .....   | ...       | Put in new piece.....                 | Broken by str'n of earth from |
| Marlborough Street.....             | .....          | 6" .....  | .....   | ...       | " .....                               | Main split driving nozel.     |
| Lagauchetière and Jac. Cartier...   | .....          | 6" .....  | 1       | ...       | Put in a new valve.....               | Spindle worn out.             |
| Dorchester and St. Constant .....   | July 3         | .....     | .....   | 1         | Put in new valve.....                 | Valve worn out.               |
| Atwater Av., S. S. River St. Pierre | "              | 30" ..... | .....   | ...       | Recaulked joint.....                  | Joint blown out.              |
| Opposite 193 Centre.....            | "              | .....     | .....   | ...       | " .....                               | "                             |
| King St., at Brush's .....          | "              | 24" ..... | .....   | 1         | Put in new valve.....                 | Valve worn out.               |
| Montmorenci, near St. Patrick ...   | "              | 24" ..... | .....   | ...       | Recaulked joint.....                  | Joint blown out.              |
| McCord and I Smith.....             | "              | 4 .....   | .....   | 1         | " .....                               | Valve worn out.               |
| St. Alexander and Bernard .....     | "              | 5 .....   | .....   | 1         | " .....                               | "                             |
| Sherbrooke and St. Mathew.....      | "              | 7 .....   | 1       | ...       | " .....                               | "                             |
| Tupper and St. Mark .....           | "              | 6" .....  | 1       | ...       | Put in new spindle.....               | Spindle worn out.             |
| Wellington and Colborne.....        | "              | .....     | .....   | 1         | Put in new valve.....                 | Valve worn out.               |
| Cadieux and Mary Ann .....          | "              | .....     | .....   | 1         | " .....                               | "                             |
| Opp. 807 Notre-Dame.....            | "              | 10" ..... | .....   | ...       | Recaulked joint.....                  | Joint Blown out.              |
| St. James and Fulford .....         | "              | .....     | .....   | 1         | Put in new valve .....                | Valve worn out.               |
| Vitré and Côté .....                | "              | .....     | .....   | 1         | " .....                               | "                             |
| Guy, South of William.....          | "              | .....     | .....   | 1         | " .....                               | "                             |
| Little Craig Street .....           | "              | .....     | .....   | 1         | Replaced rod and valve.....           | Rod too short.                |
| St. Famille and Bagg .....          | "              | .....     | 1       | ...       | Stuffing box leaking repacked valve.. | Packing worn out.             |
| Craig and Busby .....               | "              | .....     | 1       | ...       | " .....                               | "                             |
| William and Richmond .....          | "              | .....     | .....   | 1         | Put in new valve.....                 | Valve worn out.               |
| St. Catherine, above Iberville....  | "              | .....     | .....   | 1         | Changing position of hydrant.....     | Not in a good position.       |
| Lagauchetière and Bleury.....       | "              | .....     | .....   | 1         | Replaced rod and valve .....          | Rough usage.                  |
| Lagauchetière and Geneviève....     | "              | .....     | .....   | 1         | " .....                               | "                             |
| Wellington and Magdalen .....       | "              | .....     | .....   | 1         | " .....                               | "                             |

|                                     |      |    |       |       |     |                                       |                             |
|-------------------------------------|------|----|-------|-------|-----|---------------------------------------|-----------------------------|
| Montmorenci, near St. Patriok ...   | July | 19 | 24"   | ...   | ... | Put in a new piece.....               | Piece blown out.            |
| Roy and Drolet.....                 | "    | 19 | ..... | ...   | 1   | Replaced rod and valve.....           | Rough usage.                |
| Ontario and St. Constant .....      | "    | 22 | ..... | ...   | 1   | " .....                               | "                           |
| William and Richmond .....          | "    | 23 | ..... | ...   | ... | Put new iron valve frames.....        | (Paving) to replace stones. |
| Parthenais and Ontario .....        | "    | 23 | ..... | ...   | ... | Raised valve stone .....              | "                           |
| St. Dominique, N. S. Mignonne...    | "    | 23 | ...   | ...   | ... | " .....                               | "                           |
| St. Dominique and Courville.....    | "    | 17 | ..... | ...   | ... | " .....                               | "                           |
| Ontario and St. Constant....        | "    | 24 | ..... | ...   | 1   | Recaulked joint of hydrant.....       | By hydrant shoved.          |
| Common and Queen .....              | "    | 24 | ..... | ...   | 1   | Put in new valve.....                 | Valve worn out.             |
| Common and King.....                | "    | 25 | ..... | ...   | 1   | " .....                               | "                           |
| Wellington and Magdalen .....       | "    | 25 | ..... | ...   | 1   | " .....                               | "                           |
| Dubord and Sanguinet .....          | "    | 26 | 4"    | ...   | 1   | Stuffing box leaking repacked valve.. | Packing worn out.           |
| St. Maurice and Dupré .....         | "    | 26 | ...   | ...   | 1   | Put new valve.....                    | Valve broken by stone.      |
| Notre-Dame and Monarque.....        | "    | 27 | 6"    | ...   | 1   | Stuffing box leaking repacked valve.. | Packing worn out.           |
| Fortification, at Garth's .....     | "    | 27 | ..... | ...   | ... | Puddling around hydrant.....          | Ground porous.              |
| St. Alphonse Lane.. .....           | "    | 28 | 4"    | ...   | ... | Recaulked joint.....                  | Joint blown out.            |
| St. Catherine and German .....      | "    | 29 | ..... | ...   | ... | Rebuilt valve chamber.....            | Old and defective.          |
| William, near McCord.....           | "    | 29 | ..... | ...   | ... | Lowering valve stones.....            | For paving.                 |
| Mignonne and St. Hubert.....        | "    | 31 | ..... | ...   | 1   | Put in new valve.....                 | Valve worn out.             |
| St. Lawrence and Ontario .....      | Aug. | 1  | ..... | ...   | 1   | " .....                               | "                           |
| St. Maurice, past Dupré.....        | "    | 2  | 4"    | ..... | ... | Put in new piece.....                 | Piece blown out.            |
| Lagauchetière and Beaudry.....      | "    | 4  | 6"    | ...   | ... | " .....                               | Corroded through.           |
| St. James and Canning.....          | "    | 4  | ..... | ...   | 1   | Put in new valve.....                 | Valve worn out.             |
| St. James and Aqueduct .....        | "    | 5  | ..... | ...   | 1   | " .....                               | "                           |
| St. Catherine, at McGill College .. | "    | 5  | 24"   | ..... | 1   | Renewed valve chamber.....            | Paving, &c.                 |
| St. Antoine and Cathedral .....     | "    | 6  | 12"   | ..... | 1   | Put new valve stone.....              | Worn out.                   |
| St. Maurice and McGill.....         | "    | 6  | 4"    | ..... | 1   | " .....                               | "                           |
| Craig and Papineau .....            | "    | 6  | 4"    | ..... | 1   | Stuffing box leaking repacked valve.. | Blown out.                  |
| Wheel House Yard.....               | "    | 7  | 30"   | ..... | ... | Recaulked joint.....                  |                             |
| St. Dominique and Sherbrooke...     | "    | 7  | 30"   | ..... | 1   | Stuffing box leaking repacked valve.. |                             |
| Notre-Dame and Gain .....           | "    | 7  | 10"   | ..... | ... | Recaulked joint.....                  | Joint blown out.            |
| Ontario and Jacques Cartier.....    | "    | 8  | ..... | ...   | 1   | Put in new valve.....                 | Valve worn out.             |
| Lagauchetière and St. Denis.....    | "    | 9  | ..... | ...   | 1   | " .....                               | "                           |
| Sherbrooke and St. Dominique...     | "    | 11 | ..... | ...   | 1   | Put in column.....                    | Old one split by frost.     |
| Fort, corner St. Luke.....          | "    | 12 | 4"    | ..... | ... | Put in new piece.....                 | Broken over drain.          |

No. 3A—Schedule showing the Repairs done to Main Pipes, Hydrants and Valves during year 1890.

| Location.                         | Dates<br>1890 | Mains | Valves | HOW REPAIRED.                         | Probable causes of injury.   |
|-----------------------------------|---------------|-------|--------|---------------------------------------|------------------------------|
| Station at No. 1 Fire Station Aug | 13            | ..... | 1      | Put new drain to hydrant..            | Connecting to new sewer.     |
| Chatham and Suburban .....        | "             | ..... | 1      | Recaulked joint.....                  | Joint blown out.             |
| St. Catherine, corner Market      | 14 2/3        | ..... | 1      | Renewed valve chamber.....            | Old one rot'n and dangerous. |
| De la Salle .....                 | 15 10         | ..... | 1      | Recaulked joint.....                  | Joint blown out              |
| St. Anne and Ontario .....        | 15 31         | ..... | 1      | Stuffing box leaking repacked valve.. | Valve packing worn out       |
| Shannon Street .....              | 16 31         | ..... | 1      | Recaulked joint.....                  | Joint blown out.             |
| Colborne, East South .....        | 16 31         | ..... | 1      | "                                     | "                            |
| Market Street, near Shearer ..    | 18            | ..... | 1      | Put in new valve.....                 | Valve worn out.              |
| St. Catherine and Champlain ..    | 18 6          | ..... | 1      | Stuffing box leaking repacked valve.. | Valve packing worn out.      |
| Notre Dame and Galt.....          | 19 10         | ..... | 1      | Recaulked joint .....                 | Joint blown out.             |
| Decher and Mackinnon.....         | 19            | ..... | 1      | Replaced rod .....                    | No bottom check.             |
| Chapman No 5 St. Catherine.....   | 20 4          | ..... | 1      | Bonnetted pipe.....                   | Unknown cause.               |
| Brook and Notre-Dame.....         | 20 4          | ..... | 1      | Rebuilt valve chamber.....            | Old one rot'n and dangerous. |
| St. Constant and Perreault.....   | 20 4          | ..... | 1      | Put band on pipe.....                 | Hole in main pipe.           |
| Clark and Papineau.....           | 20 12         | ..... | 1      | Put iron covers instead stone .....   | Paving, &c.                  |
| William and Ganning .....         | 20 12         | ..... | 1      | "                                     | "                            |
| Notre-Dame and Parilleau .....    | 20            | ..... | 1      | Rebuilt valve chamber.....            | Old one rotten.              |
| St. Alexander and St. Catherine.. | 20 4          | ..... | 1      | Put in new piece.....                 | Sunk when intercept'g sewer  |
| Langton, North of Notre-Dame..    | 21 3          | ..... | 1      | Recaulked joint .....                 | Joint blown out.             |
| William and Richmond .....        | 21            | ..... | 1      | Put in new valve.....                 | Valve worn out.              |
| St. James and Chaboullier Square. | 22            | ..... | 1      | "                                     | "                            |
| Ontario and St. Lawrence .....    | 23            | ..... | 1      | "                                     | "                            |
| Catharina, South of Wellington... | 23            | ..... | 1      | "                                     | "                            |



| St. Catherine and University.....  | Aug.  | 27 | ..... | Put iron frame over valve.....        | Stone worn (paving &c.) |
|------------------------------------|-------|----|-------|---------------------------------------|-------------------------|
| Victoria Square and St. James..... | "     | 28 | ..... | Put in new hydrant.....               | Old one defective.      |
| Be'mont and Brunswick.....         | "     | 28 | ..... | Put in new valve.....                 | Valve worn out.         |
| Hutchison and Sherbrooke.....      | "     | 29 | ..... | Put in new rod and valve.....         | Rough usage.            |
| Mackay and St. Catherine.....      | "     | 29 | 6"    | Stuffing box leaking repacked valve.. | Valve leaking.          |
| Berri, above Roy .....             | "     | 30 | ..... | Put in new valve.....                 | Paving, &c.             |
| St. Catherine and McGill College.  | "     | 30 | ..... | Changed stones for iron frames.....   | Old worn out.           |
| Notre-Dame and Iberville .....     | "     | 30 | ..... | Put new valve stones.....             | Paving, &c.             |
| St. Catherine and Dufresne.....    | "     | 30 | ..... | Raised valve stones.....              |                         |
| Victoria and St. Catherine.....    | "     | 30 | ..... | Changed stones for iron frames.....   |                         |
| Notre-Dame and Susan .....         | "     | 30 | ..... | " " " "                               |                         |
| Notre-Dame, opposite Gaol.....     | "     | 30 | ..... | " " " "                               | For paving.             |
| Craig and Delorimier .....         | Sept. | 1  | ..... | " " " "                               |                         |
| Notre-Dame, opposite Gaol.....     | "     | 2  | ..... | Rebuilt valve chamber.....            | Old one rotten.         |
| St. Catherine and Peel .....       | "     | 2  | 12"   | Recaulked joint.....                  | Joint blown out.        |
| Park Avenue, last hydrant .....    | "     | 3  | ..... | Put new valve.....                    | Valve worn out.         |
| Ann and Brennan .....              | "     | 4  | 4"    | Recaulked joint.....                  | Joint blown out.        |
| St. Maurice, (last hydrant) .....  | "     | 5  | ..... | Put in new valve .....                | Valve worn out.         |
| Dorchester, past Bleury .....      | "     | 6  | 10"   | Recaulked joint.....                  | " "                     |
| Aqueduct and Dorchester.....       | "     | 8  | ..... | Rebuilt valve chamber.....            | Old one rotten, paving. |
| St. Catherine and Mansfield .....  | "     | 9  | ..... | " " " "                               | " "                     |
| Notre-Dame and Gaol.....           | "     | 10 | ..... | " " " "                               | " "                     |
| St. Paul and Dizier .....          | "     | 11 | ..... | Put in new valve.....                 | Valve worn out.         |
| Amherst, above St. Jean-Baptiste   | "     | 12 | ..... | " " " "                               | " "                     |
| King, South of Wellington .....    | "     | 13 | ..... | " " " "                               | " "                     |
| Notre-Dame and Gale.....           | "     | 13 | ..... | " " " "                               | " "                     |
| St. Catherine and Guy .....        | "     | 14 | ..... | Took out hydrant.....                 | Not required.           |
| Ontario and Harbour. ....          | "     | 14 | ..... | Put in new valve.....                 | Valve worn out.         |
| William and St. Martin .....       | "     | 15 | ..... | " " " "                               | " "                     |
| Gain and Ontario .....             | "     | 15 | ..... | Put new valve stone.....              | Worn out.               |
| Mignonne and Harbour. . .          | "     | 16 | ..... | " " " "                               | " "                     |
| Ontario and Shaw.....              | "     | 16 | ..... | " " " "                               | " "                     |
| St. James and Aqueduct.....        | "     | 17 | ..... | Rebuilt valve chamber.....            | Old one rotten.         |
| Notre-Dame and Fullum.....         | "     | 11 | ..... | Put iron frames over valves.....      | For paving.             |
| Young and Wellington.....          | "     | 17 | ..... | " " " "                               | " "                     |

No. 9A.—Schedule showing the Repairs done to Main Pipes, Hydrants and Valves during year 1890.

| POSITIONS.                        | Dates<br>1890. | Mains.    | Valves. | Hydrants. | HOW REPAIRED.                         | Probable causes of injury. |
|-----------------------------------|----------------|-----------|---------|-----------|---------------------------------------|----------------------------|
| Christophe and St. Catherine..... | Sept. 17       | .....     | 1       | 1         | Stuffing box leaking repacked valve.. | Thread worn off.           |
| St. Catherine and Aylmer .....    | " 13           | 4" .....  | 1       | 1         | Put in new spindle.....               | " "                        |
| King and Common.....              | " 18           | 4" .....  | 1       | 1         | " .....                               | " "                        |
| Logan and Papineau .....          | " 19           | 6" .....  | 1       | 1         | Stuffing box leaking repacked valve.. | Old packing worn out.      |
| Dorchester and Guy .....          | " 19           | 6" .....  | 1       | 1         | " " " .....                           | " " "                      |
| Ontario and Harbour .....         | " 20           | .....     | .....   | 1         | Put in new valve.....                 | Valve worn out.            |
| St. James and Chaboillez .....    | " 20           | .....     | .....   | 1         | " " .....                             | " "                        |
| Notre-Dame and Fullum .....       | " 20           | .....     | .....   | 1         | " " .....                             | " "                        |
| Harbour and Notre-Dame .....      | " 21           | .....     | 1       | 1         | Stuffing box leaking repacked valve.. | Old packing worn out.      |
| Notre-Dame and Brock.....         | " 21           | .....     | .....   | 1         | Put in new valve.....                 | Valve worn out.            |
| Opp. 119 Camj eau Street.....     | " 22           | 4" .....  | .....   | .....     | Put in new piece.....                 | Corroded through.          |
| Chatham, below St. Antoine .....  | " 22           | .....     | .....   | 1         | Put in new valve .....                | Valve worn out.            |
| University and Cathcart... ..     | " 23           | .....     | .....   | 1         | Rebuilt hydrant chamber .....         | Old one defective.         |
| Albert and Félix.....             | " 23           | .....     | .....   | 1         | " " .....                             | " "                        |
| Metcalfe and St. Catherine .....  | " 24           | .....     | .....   | .....     | Raising valve stone.....              | For paving.                |
| St. Catherine and Shaw .....      | " 24           | .....     | .....   | .....     | Put iron covers over valve.....       | " "                        |
| St. James and Windsor .....       | " 25           | 24" ..... | .....   | .....     | Recaulked joint.....                  | Joint blown out.           |
| and Vitré .....                   | " 25           | .....     | .....   | .....     | Changed position of hydrants.....     | Put a new line.            |
|                                   | " 25           | 12" ..... | 1       | 1         | Stuffing box leaking repacked valve.. | Valve worn out.            |
|                                   |                |           |         |           | Put in new valve.....                 | Valve worn out.            |

|                                   |       |    |          |  |                             |
|-----------------------------------|-------|----|----------|--|-----------------------------|
| St. Catherine and Papineau.....   | Sept. | 26 | .....    | Put iron frame over valve.....           | Stone worn, (paving).       |
| Lacroix and Notre-Dame.....       | Oct.  | 27 | .....    | .....                                    | .....                       |
| Roy and St. Lawrence.....         | "     | 2  | .....    | Stuffing box leaking repacked valve..... | Worn out.                   |
| Eleanor and William.....          | "     | 3  | 1".....  | Put in new spindle.....                  | Rough usage.                |
| Shannon, South of Ottawa.....     | "     | 3  | .....    | Put in new rod and valve.....            | Valve worn out.             |
| Sherbrooke and Visitation.....    | "     | 4  | .....    | Put in new valve.....                    | "                           |
| Notre-Dame and Dezery.....        | "     | 4  | .....    | "  | "                           |
| Centre and St. Francis.....       | "     | 6  | .....    | "  | "                           |
| Napoléon and St. Dominique....    | "     | 6  | 4".....  | stuffing box leaking repacked valve..... | Joint blown out.            |
| St. Catherine and University..... | "     | 7  | 24"..... | Recaulked joint.....                     | Packing worn out.           |
| Logan and Harbour.....            | "     | 7  | 6".....  | stuffing box leaking repacked valve..... | Valve worn out.             |
| St. Lambert and St. James.....    | "     | 8  | .....    | Put in new valve.....                    | Stone worn, (paving).       |
| St. Catherine and Paré.....       | "     | 8  | .....    | Put iron frames over valves.....         | "                           |
| Craig and Gain.....               | "     | 8  | .....    | "  | "                           |
| Craig and Shaw.....               | "     | 8  | .....    | "  | "                           |
| Opp. 40 Amherst Street.....       | "     | 9  | 4".....  | Plugged hole in main and strap.....      | Corroded through.           |
| Delorimier Avenue.....            | "     | 10 | 4".....  | Put in new spindle.....                  | Spindle worn out.           |
| St. James and Félix.....          | "     | 11 | .....    | Put in new valve.....                    | Valve worn out.             |
| Amherst and Mignonne.....         | "     | 13 | .....    | "  | "                           |
| McCord, near Smith.....           | "     | 14 | 12"..... | Recaulked joint.....                     | Joint blown out.            |
| Mill at Peck Benny's & Co.....    | "     | 15 | .....    | Enlarged meter chamber.....              | Old one too small.          |
| Dufresne and St. Catherine.....   | "     | 15 | 4".....  | Recaulked joint.....                     | Joint blown out.            |
| Delorimier, near Ontario.....     | "     | 16 | .....    | Replaced rod and put new valve.....      | Valve worn, no bottom check |
| St. Constant and Lagauchetière..  | "     | 17 | 6".....  | Stuffing box leaking repacked valve..... | Packing worn out.           |
| Brons Ion Lane.....               | "     | 18 | 4".....  | Recaulked joint.....                     | Joint blown out.            |
| Delorimier and St. Catherine..... | "     | 20 | .....    | Put iron frames over valve.....          | Paving to be made.          |
| Lacroix and Notre-Dame.....       | "     | 21 | .....    | "  | "                           |
| Lacroix and St. Louis.....        | "     | 22 | .....    | "  | "                           |
| Papineau and St. Catherine.....   | "     | 22 | 6".....  | stuffing box leaking repacked valve..... | Packing worn out.           |
| St. James and Mountain.....       | "     | 23 | 10"..... | "  | "                           |
| St. Antoine and Guy.....          | "     | 24 | 4".....  | "  | "                           |
| Gathcart and University.....      | "     | 25 | 4".....  | Put in new piece.....                    | Intercepting sewer.         |
| German and St. Catherine.....     | "     | 27 | 4".....  | Recaulked joint.....                     | Joint blown out.            |
| Marlborough and St. Catherine..   | "     | 27 | 4".....  | Put in new piece.....                    | Cause unknown.              |
| Opp. 119 Centre Street.....       | ..... | 24 | .....    | Recaulked joint.....                     | Joint blown out.            |

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1. The first part of the document is a list of names and addresses, which appears to be a directory or a list of contacts. The names are written in a cursive script, and the addresses are listed below them. The list includes names such as "John Doe", "Jane Smith", and "Robert Brown", along with their respective addresses.

| Address                         | Amount | Remarks |
|---------------------------------|--------|---------|
| Dorchester, Charles Dufferin Rd | 100    |         |
| Colborne, St. Vincent           | 100    |         |
| Gosford and Camp de Mars        | 100    |         |
| Opposite 14 St. Victor          | 100    |         |
| Chomely and St. Luke            | 100    |         |
| Dorchester and St. Constant     | 100    |         |
| Notre-Dame, opp. Court House    | 100    |         |
| St. Catherine and St. Constant  | 100    |         |
| St. Catherine, (Philippe)       | 100    |         |
| Commissioner's at Home, Maries  | 100    |         |
| Dorchester, past Congregational | 100    |         |
| Dorchester and St. Lawrence     | 100    |         |
| Lagouchette and Monique         | 100    |         |
| St. James and Felix             | 100    |         |
| Road and Pine                   | 100    |         |
| ult and St. Lawrence            | 100    |         |

|                                      |      |        |       |   |                             |                         |
|--------------------------------------|------|--------|-------|---|-----------------------------|-------------------------|
| Delbouse, below Ottawa .....         | Nov. | 29     | ..... | 1 | Thawed sludge .....         | Sludge frozen.          |
| St. Urbain and Sherbrooke .....      | "    | 29 4"  | ..... | 1 | Put in new piece .....      | Main sunk in drain cul. |
| St. Famille and Pine .....           | "    | 29     | ..... | 1 | Thawed sludge .....         | Sludge frozen.          |
| Notre-Dame de Lourdes Avenue ..      | "    | 30     | ..... | 1 | " .....                     | "                       |
| Dorchester and Mansfield .....       | "    | 30 12" | ..... | 1 | Recalked joint .....        | Joint blown out.        |
| St. Catherine and Closse .....       | "    | 30     | ..... | 1 | Put in new valve .....      | Valve worn out.         |
| Dorchester and Bishop .....          | "    | 31     | ..... | 1 | " .....                     | "                       |
| Chaboillez Square .....              | "    | 31     | ..... | 1 | " .....                     | "                       |
| Wellington and Congregation ..       | "    | 31     | ..... | 1 | " .....                     | "                       |
| Chatham and Payette .....            | "    | 31     | ..... | 1 | Took out hydrant .....      | Not required.           |
| Champlain and Rose .....             | "    | 31 6"  | ..... | 1 | Recalked joint .....        | Joint blown out.        |
| Amherst, Ontario to Sherbrooke ..    | Dec. | 1      | ..... | 1 | Taking away old hydrants .. | Replaced.               |
| Visitation, above Lafontaine .....   | "    | 2      | ..... | 1 | Put in new valve .....      | Valve worn out.         |
| Quiblier and Fort .....              | "    | 3      | ..... | 1 | Put valve stone .....       | In place of wood cover. |
| Dorchester and Dominion Square ..    | "    | 4 6"   | ..... | 1 | Put new valve .....         | Old one no good.        |
| Verchères Avenue .....               | "    | 5 6"   | ..... | 1 | Put in new piece .....      | Split by frost.         |
| Argyle Avenue .....                  | "    | 6      | ..... | 1 | Thawed sludge .....         | Sludge frozen.          |
| St. Catherine and Davidson .....     | "    | 6      | ..... | 1 | Put in new valve .....      | Valve worn out.         |
| Moreau, above Ontario .....          | "    | 8      | ..... | 1 | " .....                     | "                       |
| McGill College Grounds .....         | "    | 9      | ..... | 1 | " .....                     | "                       |
| Fulford and Delisle .....            | "    | 10     | ..... | 1 | " .....                     | "                       |
| St. Hubert, Dorchester to Ontario .. | "    | 10     | ..... | 1 | Took out old hydrant .....  | Replaced.               |
| St. James and Windsor .....          | "    | 11 24" | ..... | 1 | Recalked joint .....        | Joint blown out.        |
| Inspector and Notre-Dame .....       | "    | 12 4"  | ..... | 1 | Put in new spindle .....    | Worn out.               |
| Rivard and Mary Ann .....            | "    | 12     | ..... | 1 | Put in new valve .....      | Valve worn out.         |
| Napoléon and Pantaléon .....         | "    | 13     | ..... | 1 | " .....                     | "                       |
| Notre-Dame and Shaw .....            | "    | 13     | ..... | 1 | " .....                     | "                       |
| Wellington and St. Etienne .....     | "    | 15     | ..... | 1 | " .....                     | "                       |
| Wellington, past Mullin .....        | "    | 15     | ..... | 1 | " .....                     | "                       |
| Lagauchetière and St. Dominique ..   | "    | 16     | ..... | 1 | " .....                     | "                       |
| Canning, at Crossing .....           | "    | 17 4"  | ..... | 1 | Recalked joint .....        | Joint blown out.        |
| St. Catherine and Guy .....          | "    | 18 12" | ..... | 1 | " .....                     | "                       |
| Cuthbert and St. Lawrence .....      | "    | 20     | ..... | 1 | Raised valve stone .....    | Sunk.                   |
| Notre-Dame and St. Frs.-Xavier ..    | "    | 20 4"  | ..... | 1 | Put in new spindle .....    | Spindle broken.         |
| Marlborough and St. Catherine ..     | "    | 22     | ..... | 1 | Put in new valve .....      | Valve worn out.         |

No. 9A.—Schedule showing the Repairs done to Main Pipes, Hydrants and Valves during year 1890.

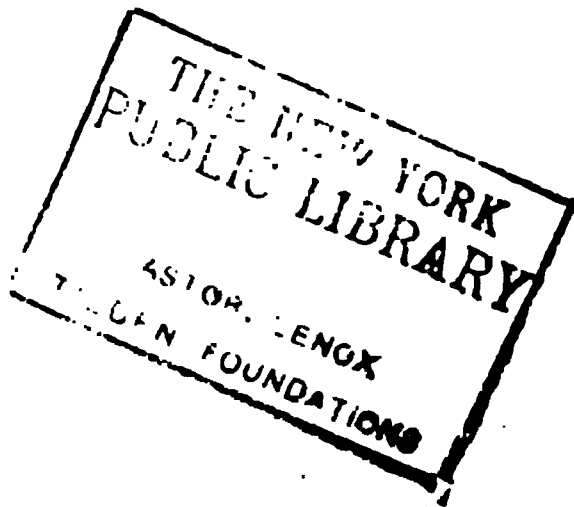
| POSITIONS.                        | Dates<br>1890. | Mains. | Valves. | Hydrants | HOW REPAIRED.                          | Probable causes of injury. |
|-----------------------------------|----------------|--------|---------|----------|--|----------------------------|
| Aylmer and Mayor .....            | Dec. 22        | .....  | ...     | 1        | Put in new valve...                    | Valve worn out.            |
| Craig and St. François-Xavier ... | " 23           | .....  | ...     | 1        | " .....                                | " "                        |
| Mignonne and Sanguinet.....       | " 23           | .....  | ...     | 1        | Took out hydrant.....                  | Not required.              |
| Inspector and St. Maurice .....   | " 24           | .....  | 1       | ...      | Building valve chamber .....           | Instead of box.            |
| St. Thérèse and Vincent Street—   | " 24           | .....  | ...     | ...      | Recaulked joint.....                   | Joint blown out.           |
| Chaussé et Parthenais.....        | " 24           | .....  | ...     | 1        | Put in new hydrant.....                | Old one split by frost.    |
| Chenneville and Dorchester .....  | " 25           | .....  | 1       | ...      | Stuffing box leaking repacked valve... |                            |
| University and Sherbrooke .....   | " 26           | .....  | ...     | 1        | Put in new valve.....                  | Valve worn out.            |
| Ottawa and Shannon .....          | " 27           | .....  | ...     | 1        | " .....                                | " "                        |
| Ontario and Berri .....           | " 29           | .....  | ...     | 1        | " .....                                | " "                        |
| St. Catherine and Beaudry .....   | " 30           | .....  | ...     | 1        | " .....                                | " "                        |
| St. Peter and Foundling... ..     | " 31           | .....  | ...     | 1        | " .....                                | " "                        |
| St. Catherine, near Robb .....    | " 31           | .....  | ...     | 1        | " .....                                | " "                        |
| Dorchester and St. Dominique ...  | " 31           | .....  | ...     | 1        | " .....                                | " "                        |

NTREAL.

1833

10,575,363  
10,745,981  
10,531,461  
10,356,518  
9,626,842  
10,566,558  
11,299,205  
11,374,208  
11,038,378  
11,101,760  
10,091,780  
9,331,761

10,552,174  
985,415  
.....



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**No. 11.—SCHEDULE SHOWING THE METERS IN USE AND THOSE AT THE SHOP  
FROM 1876 TO 1890.**

| DATES.    | Property of the Water Works |                      |                         |        | Property of Private Parties. |                      |                         |        | Grand<br>Total. |
|-----------|-----------------------------|----------------------|-------------------------|--------|------------------------------|----------------------|-------------------------|--------|-----------------|
|           | In the<br>City.             | Outside<br>the City. | At the<br>work<br>shop. | Total. | In the<br>City.              | Outside<br>the City. | At the<br>work<br>shop. | Total. |                 |
| 1876..... | 124                         | 155                  | 60                      | 339    | 66                           | 2                    | .....                   | 68     | 407             |
| 1877..... | 149                         | 145                  | 48                      | 342    | 73                           | 1                    | 4                       | 78     | 420             |
| 1878..... | 223                         | 16                   | 111                     | 350    | 72                           | 1                    | 4                       | 77     | 427             |
| 1879..... | 211                         | 16                   | 167                     | 394    | 69                           | 1                    | 8                       | 78     | 472             |
| 1880..... | 224                         | 12                   | 178                     | 414    | 68                           | 1                    | 8                       | 77     | 491             |
| 1881..... | 255                         | 11                   | 184                     | 450    | 64                           | 1                    | 10                      | 75     | 525             |
| 1882..... | 298                         | 9                    | 175                     | 482    | 62                           | 1                    | 11                      | 74     | 556             |
| 1883..... | 368                         | 12                   | 163                     | 543    | 45                           | 1                    | 9                       | 55     | 598             |
| 1884..... | 411                         | 10                   | 184                     | 605    | 46                           | 1                    | 10                      | 56     | 662             |
| 1885..... | 457                         | 10                   | 164                     | 631    | 41                           | .....                | 14                      | 55     | 686             |
| 1886..... | 501                         | 7                    | 202                     | 710    | 36                           | .....                | 17                      | 53     | 763             |
| 1887..... | 535                         | 7                    | 182                     | 724    | 46                           | 1                    | 16                      | 63     | 787             |
| 1888..... | 556                         | 6                    | 204                     | 766    | 52                           | 2                    | 16                      | 70     | 836             |
| 1889..... | 601                         | 9                    | 201                     | 811    | 55                           | 5                    | 15                      | 75     | 886             |
| 1890..... | 628                         | 6                    | 286                     | 920    | 57                           | 2                    | .....                   | 59     | 979             |

**NATIONAL YOUTH & NIPER 2016** 9-11/11/2016

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SCHEDULE 11a.—METERS IN OPERATION. DECEMBER 31st 1890—Continued.

| Name of consumers            | Streets.            | Description of establishments. | Size of meters. | Kind of meters. | No. of meters. | Private. | Paid by meter. | By assess-ment. | All by meter. | Engines. | Elevators. | Specials. |
|------------------------------|---------------------|--------------------------------|-----------------|-----------------|----------------|----------|----------------|-----------------|---------------|----------|------------|-----------|
| Cave h. L. Kiscock & Bunnell | 12 St. Alexes.      | Dry goods.                     | 2"              | Gem.            | 488            | Private  | X              |                 |               |          | X          |           |
| Caverhill L. & Co.           | "                   | Hardware.                      | 2"              | "               | 1024           |          | X              |                 | X             |          | X          |           |
| Christon J. A. Co.           | 477 St. Paul        | Furners                        | 1"              | Crown           | 576            |          | X              |                 | X             |          |            |           |
| Chase & Norton               | 435                 | Importers                      | 3"              | Empire.         | 802            |          | X              |                 |               | X        |            |           |
| Chaput Sons & Co.            | St. Dezer           | Grocers (wh sale)              | 3"              | Gem             | 177            |          | X              |                 |               |          |            |           |
| "                            | 2 DeBresoles        | "                              | 4"              | "               | 839            |          | X              |                 |               |          |            |           |
| Cassidy J. L. & Co.          | LeRoy.              | Importers                      | 3"              | "               | 824            |          | X              |                 |               |          |            |           |
| Canad an Rubber Co.          | Sr Dezer            | Manufacturers                  | 3"              | "               | 703            |          | X              |                 |               |          |            |           |
| "                            | 4 & 6 Papineau R    | "                              | 3"              | "               | 873            |          | X              |                 |               |          |            |           |
| Congregation of N. Dame      | 40 St. Jean-Bte     | Convent.                       | 1"              | Union.          | 143            |          | X              |                 | X             |          |            |           |
| "                            | "                   | "                              | "               | Crown           | 529            |          | X              |                 | X             |          |            |           |
| "                            | "                   | "                              | "               | "               | 389            |          | X              |                 | X             |          |            |           |
| "                            | 37 St. Denis        | Academy                        | "               | "               | 931            |          | X              |                 | X             |          |            |           |
| Catholic School Comm's       | 184 Craig           | "                              | "               | Worthington     | 609            |          | X              |                 | X             |          |            |           |
| Congregation of N. Dame      | 754 St. Catherine.  | "                              | "               | Crown           | 715            |          | X              |                 | X             |          |            |           |
| Catholic school Comm's       | 156 Fullum.         | "                              | "               | "               | 186            |          | X              |                 | X             |          |            |           |
| Congregation N. Dame         | 456 St. Urbain      | "                              | "               | "               | 273            |          | X              |                 | X             |          |            |           |
| Canada Paper Co.             | Fortification Lane. | Manufacturers                  | "               | Empire.         | 1005           |          | X              |                 | X             |          |            |           |
| Canada Bank Note Co.         | 326 Craig           | Printers                       | "               | "               | 990            |          | X              |                 | X             |          |            |           |
| Cusson A. & fils             | Commissioners       | Grocers                        | 2"              | Gem.            | 428            |          | X              |                 |               |          |            |           |
| Cronine Miss.                | 1428 Notre Dame.    | Academy                        | "               | Crown           | 956            |          | X              |                 | X             |          |            |           |
| Coutu & Co.                  | 1450                | Manufacturers                  | "               | Empire.         | 1011           |          | X              |                 | X             |          |            |           |
| Crawford D.                  | 140 St. Urbain      | Soap manuf.                    | "               | "               | 998            |          | X              |                 | X             |          |            |           |
| Canada Cigar Box Co.         | 67                  | Box manuf.                     | "               | "               | 803            |          | X              |                 | X             |          |            |           |
| Chapeloup Estate             | 587 Craig           | Founder.                       | "               | Worthington     | 604            |          | X              |                 | X             |          |            |           |
| Christian Brothers           | 50 Cote.            | School                         | 1"              | Crown           | 219            |          | X              |                 | X             |          |            |           |
| "                            | "                   | "                              | "               | Worthington     | 476            |          | X              |                 | X             |          |            |           |

[illegible]

SCHEDULE 11a.—METERS IN OPERATION. DECEMBER 31st 1880—Continued.

| Name of consumers.       | Streets.        | Description of establishments. | Size of meters. | Kind of meters. | No. of meters. | Private. | Paid by meter. | By meter. | All by meter. | Engines. | Elevators. |
|--------------------------|-----------------|--------------------------------|-----------------|-----------------|----------------|----------|----------------|-----------|---------------|----------|------------|
| Canada Pu verizing Co.   | 88 Ann          | Manufacturers                  | 1"              | Empire          | 963            |          | X              |           |               | X        |            |
| Canada Furniture Co.     | Colborne        | "                              | 2"              | "               | 863            |          | X              |           |               | X        |            |
| Men Pack'g Co.           | Young           | "                              | 2"              | "               | 871            |          | X              |           |               |          |            |
| Cowan J.                 | 3 Dalhousie     | "                              | 1"              | Union           | 119            |          | X              |           |               |          |            |
| Crathern & Caverhill     | Ann             | Hardware                       | 3"              | Gem             | 772            |          | X              |           |               |          | X          |
| "                        | 13 Colborne     | "                              | 3"              | "               | 745            |          | X              |           |               |          | X          |
| Canada Horse Nail Co.    | 129 Mill        | Manufacturers                  | 3"              | Empire          | 928            |          | X              |           |               | X        |            |
| Canada Sugar Refinery    | St. Patricks    | Sugar refiners                 | 4"              | Crown           | 868            |          | X              |           |               |          |            |
| "                        | "               | "                              | 1"              | Union           | 274            |          | X              |           |               |          |            |
| Consumers Cordage Co.    | 267 "           | Rope Manuf.                    | 1"              | Worthington     | 689            |          | X              |           |               | X        |            |
| Congregational Nuns      | 15 Mullins      | School                         | 1"              | Crown           | 631            |          | X              |           |               |          |            |
| "                        | 102 McCord      | "                              | 1"              | Worthington     | 608            |          | X              |           |               |          |            |
| "                        | 2361 Notre-Dame | "                              | 1"              | Crown           | 833            |          | X              |           |               |          |            |
| Catholic School Comm     | Grand Trunk     | "                              | 1"              | "               | 157            |          | X              |           |               |          |            |
| "                        | 245 Guy         | "                              | 1"              | "               | 386            |          | X              |           |               |          |            |
| "                        | "               | "                              | 1"              | "               | 385            |          | X              |           |               |          |            |
| Christian Brothers       | 127 Young       | Dwelling                       | 1"              | Union           | 187            |          | X              |           |               |          |            |
| "                        | 323 Richmond    | "                              | 1"              | "               | 175            |          | X              |           |               |          |            |
| "                        | St. Martin      | School                         | 1"              | "               | 39             |          | X              |           |               |          |            |
| Canada Jute Co.          | 17 "            | Manufacturers                  | 1"              | Worthington     | 456            |          | X              |           |               | X        |            |
| Dantin A.                | William         | Can. mar. works.               | 1"              | "               | 545            |          | X              |           |               | X        |            |
| Canada Galvanizing Co.   | 22 Latour       | Manufacturers                  | 1"              | Crown           | 932            |          | X              |           |               |          |            |
| "                        | St. Sophie Lane | "                              | 1"              | Empire          | 991            |          | X              |           |               | X        |            |
| Oreo Scott & Co.         | "               | " shirts & collars             | 1"              | Crown           | 844            |          | X              |           |               |          |            |
| "                        | "               | "                              | 1"              | "               | 845            |          | X              |           |               |          |            |
| "                        | "               | "                              | 1"              | Empire          | 671            |          | X              |           |               |          |            |
| Crescent st. Presb. Ch.  | Crescent        | Church organ                   | 3"              | Crown           | 951            |          | X              |           |               | X        |            |
| Church of King's. Home   | 403 Guy         | Home                           | 1"              | "               | 965            |          | X              |           |               |          |            |
| Christ Church Cathedral. | University      | Church organ                   | 2"              | Worthington     | Private.       |          | X              |           |               |          |            |
| Oadwell R. L.            | St. James       | Manufacturers                  | 1"              | Crown           | 851            |          | X              |           |               |          |            |

| Canada Ewan & Co        | 12 St. Helen        | Dry goods      | Gem         | 809     | Testing w. pipes |
|-------------------------|---------------------|----------------|-------------|---------|------------------|
| Cooper James            | 27 Normand          | Manufacturers  | Empire      | 809     |                  |
| Canada Pipe & F. Co.    | William             | Founders       | Crown       | 1047    |                  |
| Canadian Pacific R. Co. | Windsor             | Railway Co     | "           | Private |                  |
| "                       | Aqueduct            | "              | "           | "       |                  |
| "                       | Bison               | "              | "           | "       |                  |
| Canada Switch Co.       | St. Etienne         | Manufacturers  | Empire      | 897     |                  |
| Cote St. Antoine W., Co | Atwater-Avenue      | Water Company  | Worthington | 521     |                  |
| "                       | St. Catherine       | "              | Crown       | 641     |                  |
| Date J.                 | Fortification lane  | Plumbers       | Empire      | 1007    |                  |
| Duncan J. & Co.         | 450 St. Paul        | Merchants      | Gem         | Private |                  |
| Darling W.              | 30 St. Sulpice      | Hardware       | Union       | 439     |                  |
| Dubord A.               | 16 St. Amable       | Manufacturer   | Crown       | 622     |                  |
| D'Amour C.              | 1 Place d'Arms      | Agent          | Worthington | 848     |                  |
| Dominion S. G. Man. Co. | Champ de Mars       | Manufacturers  | Empire      | 560     |                  |
| Darling Brady           | 96 St. Ch. Borromee | Soap manuf.    | Worthington | 880     |                  |
| Davis S. & Son          | 46 Cote             | Cigar manuf.   | Worthington | 108     |                  |
| Dominion Rink           | 185 St. Dominique   | Skating rink   | Crown       | 787     |                  |
| Dupuis Freres           | St. Andre           | Dry goods      | Gem         | 343     |                  |
| Donnelly P.             | Perthuis            | Saw millers    | Union       | 638     |                  |
| Dominion Oil Cloth Co.  | 858 St. Catherine   | Manufacturers  | Crown       | 952     |                  |
| Deaf & Dumb Institution | Berri               | Asylum         | "           | 594     |                  |
| "                       | 399 St. Denis       | "              | "           | 577     |                  |
| "                       | "                   | "              | "           | 583     |                  |
| "                       | "                   | "              | "           | 572     |                  |
| Darling Bros            | 112 Queen           | Machinists     | Worthington | 494     |                  |
| Dominion Transport Co   | Dalhousie           | "              | Empire      | 884     |                  |
| Daves & Co              | 521 St. James       | Bottling dept. | Worthington | 619     |                  |
| "                       | Cathedral           | "              | "           | 533     |                  |
| "                       | St. Margaret        | "              | Crown       | 831     |                  |
| Dow & Co                | 2056 Notre Dame     | Brewing        | "           | 774     |                  |
| "                       | Colborne            | "              | "           | 694     |                  |
| "                       | Notre Dame          | "              | Union       | 275     |                  |
| "                       | Colborne            | "              | Gem         | 436     |                  |
| "                       | Notre Dame          | "              | Worthington | 686     |                  |
| "                       | Colborne            | "              | Crown       | 753     |                  |
| Dominion Steam Laundry  | 2435 Notre Dame     | Laundry        | Worthington | 743     |                  |
| Davis Lawrence & Co.    | Chatham             | Druggists      | "           | 898     |                  |

[illegible]

| No. | Name              | Type  | Foundry | Engine | Motor | Boiler & washing<br>[boilers] | Not paid for | For a motor not<br>used. |
|-----|-------------------|-------|---------|--------|-------|-------------------------------|--------------|--------------------------|
| 1   | Crown .....       | 757   |         |        |       |                               |              |                          |
| 1   | Worthington ..... | 270   |         |        |       |                               |              |                          |
| 3   | Empire .....      | 1006  |         |        |       |                               |              |                          |
| 3   | Gem .....         | 883   |         |        |       |                               |              |                          |
| 3   | Union .....       | 174   |         |        |       |                               |              |                          |
| 1   | Worthington ..... | 520   |         |        |       |                               |              |                          |
| 1   | Crown .....       | 870   |         |        |       |                               |              |                          |
| 1   | Empire .....      | 916   |         |        |       |                               |              |                          |
| 3   | Crown .....       | 588   |         |        |       |                               |              |                          |
| 3   | Worthington ..... | 614   |         |        |       |                               |              |                          |
| 3   | Empire .....      | 802   |         |        |       |                               |              |                          |
| 2   | Gem .....         | 865   |         |        |       |                               |              |                          |
| 2   | Worthington ..... | ..... |         |        |       |                               |              |                          |
| 2   | Gem .....         | 434   |         |        |       |                               |              |                          |
| 1   | Worthington ..... | 742   |         |        |       |                               |              |                          |
| 4   | Gem .....         | 265   |         |        |       |                               |              |                          |
| 3   | Empire .....      | 813   |         |        |       |                               |              |                          |
| 3   | Gem .....         | 704   |         |        |       |                               |              |                          |
| 3   | " .....           | 406   |         |        |       |                               |              |                          |
| 1   | Worthington ..... | 208   |         |        |       |                               |              |                          |
| 3   | Gem .....         | 788   |         |        |       |                               |              |                          |
| 1   | Union .....       | 136   |         |        |       |                               |              |                          |
| 1   | Empire .....      | 1034  |         |        |       |                               |              |                          |
| 3   | Gem .....         | 672   |         |        |       |                               |              |                          |
| 3   | Crown .....       | 947   |         |        |       |                               |              |                          |
| 1   | " .....           | 1018  |         |        |       |                               |              |                          |
| 4   | Gem .....         | ..... |         |        |       |                               |              |                          |
| 1   | Crown .....       | 733   |         |        |       |                               |              |                          |
| 3   | Empire .....      | 831   |         |        |       |                               |              |                          |





| Address         | Business             | Telephone | City      |
|-----------------|----------------------|-----------|-----------|
| 1111 N. 1st St. | Hotel Dieu           | 1111      | St. Louis |
| 1111 N. 1st St. | Hospice St. Joseph   | 1111      | St. Louis |
| 1111 N. 1st St. | Hochelaga Cotton Co. | 1111      | St. Louis |
| 1111 N. 1st St. | Hochelaga Convent    | 1111      | St. Louis |
| 1111 N. 1st St. | Howard Pulp Co.      | 1111      | St. Louis |
| 1111 N. 1st St. | Hutchinson J. H.     | 1111      | St. Louis |
| 1111 N. 1st St. | Henderson Bros.      | 1111      | St. Louis |
| 1111 N. 1st St. | Hamilton N. E. & Co. | 1111      | St. Louis |
| 1111 N. 1st St. | Hospice St. Joseph   | 1111      | St. Louis |
| 1111 N. 1st St. | Hotel R. & L.        | 1111      | St. Louis |



SCHEDULE 11a.—METERS IN OPERATION, DECEMBER 31st 1890—Continued.

| Name of consumer.     | Streets           | Description of establishments. | Size of meters. | Kind of meters. | No. of meters. | Private. | Paid by meter. | By meter. | All by meter. | Engines. | Elevators. | Specials. |
|-----------------------|-------------------|--------------------------------|-----------------|-----------------|----------------|----------|----------------|-----------|---------------|----------|------------|-----------|
| M. & Co               | 8 St. Rose        | Manufacturers                  | 1"              | Crown           | 866            |          | X              |           | X             |          |            |           |
| "                     | Papineau road     | "                              | 1"              | Worthington     | 475            |          | X              |           | X             |          |            |           |
| "                     | 8 St. Rose        | "                              | 1"              | Union           | 252            |          | X              |           | X             |          |            |           |
| Lamarche & Gagnon     | Josaphat lane     | Wood Cutters                   | 1"              | Empire          | 805            |          | X              |           |               | X        |            |           |
| Laing M. & Sons       | 95 Parthenais     | Butchers                       | 1"              | "               | 902            |          | X              |           |               | X        |            |           |
| Lapierre & Paquette   | 573 Notre Dame    | Sawmills                       | 1"              | "               | 807            |          | X              |           |               | X        |            |           |
| Lefebvre A. & Co      | 241 St. Henry     | Soda water                     | 1"              | Crown           | 723            |          | X              |           | X             |          |            |           |
| Lachine Canal         | Mill              | Workshop                       | 1"              | Worthington     | 502            |          | X              |           |               | X        |            |           |
| Larmonth & Co         | 260 Mullins       | Machinists                     | 1"              | Crown           | 203            | Private. | X              |           |               | X        |            |           |
| Ligget & Hamilton     | 1884 Notre Dame   | Dry goods                      | 4"              | Gem             | 635            |          | X              |           |               |          |            |           |
| Labbe G. H. & Co      | 445 St. James     | Furniture                      | 4"              | "               | 896            |          | X              |           |               |          |            |           |
| Lymburner & Mathews   | 21 St. David lane | Founders                       | 1"              | Empire          | 675            |          | X              |           |               | X        |            |           |
| Linton J. & Co        | 37 Victoria sq.   | Boots & shoes                  | 1"              | Worthington     | 493            |          | X              |           |               | X        |            |           |
| Leslie James          | Craig & St. Ant.  | Belting &c.                    | 1"              | "               | 690            |          | X              |           |               | X        |            |           |
| Lang Manuf. Co        | 16 St. Monique    | Biscuit manuf.                 | 1"              | Crown           | 657            |          | X              |           | X             |          |            |           |
| Ladies Benevolent     | 31 Berthelet      | Institution                    | 1"              | Worthington     | 539            |          | X              |           |               |          |            |           |
| "                     | "                 | "                              | 1"              | "               | 454            |          | X              |           |               | X        |            |           |
| Lariviere A. N. C.    | St. Margaret      | Planing mill                   | 1"              | "               | 526            |          | X              |           |               |          |            |           |
| Murphy J. & Co        | 1781 Notre Dame   | Dry goods                      | 4"              | Gem             | 320            |          | X              |           |               |          |            |           |
| Morton Phillips & Co  | 1755              | Printers                       | 3"              | "               | 729            |          | X              |           |               |          |            |           |
| "                     | "                 | "                              | 1"              | Crown           | 435            |          | X              |           |               |          |            |           |
| Mackenzie J. G. & Co  | 381 St. Paul      | Dry goods                      | 2"              | Gem             | 701            |          | X              |           |               |          |            |           |
| Mongenaia Boivin & Co | 170 Commissioners | Merchants                      | 5"              | "               | 720            |          | X              |           |               |          |            |           |
| "                     | "                 | "                              | 1"              | "               |                |          | X              |           |               |          |            |           |

Gas engine.



[illegible]

|                        | Building & offices. | "  | Gem         | Private. | X | I | O | Sr |
|------------------------|---------------------|----|-------------|----------|---|---|---|----|
| Molson B.              | 229 St. James       | 3" | Crown       | 770      |   |   |   |    |
| Mackay Bros.           | 170 McGill          | 3" | Crown       | 790      |   |   |   |    |
| Monette J.             | St. Paul            | 3" | Crown       | 761      |   |   |   |    |
| Moneton & Co.          | 10 St. Peter        | 1" | Union       | 164      |   |   |   |    |
| Morley J. T.           | 699 LaGauchetière   | 4" | Crown       | 852      |   |   |   |    |
| Montreal Stock yards.  | 112 St. Rienne      | 2" | Gem         | 491      |   |   |   |    |
| "                      | "                   | 1" | Crown       | 654      |   |   |   |    |
| McClary M. & Co.       | 159 Mill            | 3" | Gem         | 845      |   |   |   |    |
| McArthur Ornelle & Co. | 375 St. Paul        | 3" | Empire      | 992      |   |   |   |    |
| McArthur & Co.         | 312                 | 1" | Worthington | 681      |   |   |   |    |
| McDonald W. O.         | 15 Voligeurs        | 6" | Crown       | Private. |   |   |   |    |
| McLaren J. R.          | 697 Ontario         | 1" | Empire      | 386      |   |   |   |    |
| McGrail M. T. & Son.   | Frontenac           | 3" | Union       | 308      |   |   |   |    |
| McLaren W. D.          | 23 Wellington       | 4" | Empire      | 900      |   |   |   |    |
| McGarvey O. & Son.     | 56 College          | 4" | Gem         | 342      |   |   |   |    |
| McLaren J. C. & Son.   | 1849 Notre Dame     | 1" | Empire      | 385      |   |   |   |    |
| McCarthy M.            | 394 St. James       | 1" | Union       | 115      |   |   |   |    |
| McNally E. J. & Co.    | 23 Beaver Hall      | 3" | Worthington | 535      |   |   |   |    |
| "                      | 742 LaGauchetière   | 3" | Worthington | 536      |   |   |   |    |
| "                      | "                   | 3" | Union       | 640      |   |   |   |    |
| McVey J.               | 784 Cathcart        | 3" | Crown       | 656      |   |   |   |    |
| McClanaghan D.         | Livery              | 3" | "           | 670      |   |   |   |    |
| McGill College.        | Hotel               | 1" | "           | 755      |   |   |   |    |
| "                      | Museum              | 1" | "           | 1022     |   |   |   |    |
| "                      | "                   | 1" | "           | 1020     |   |   |   |    |
| "                      | Observatory         | 1" | "           | 968      |   |   |   |    |
| "                      | Medical dept.       | 1" | "           | 962      |   |   |   |    |
| "                      | "                   | 1" | "           | 1019     |   |   |   |    |
| "                      | "                   | 1" | "           | 387      |   |   |   |    |
| "                      | "                   | 1" | "           | 799      |   |   |   |    |
| "                      | "                   | 1" | "           | 783      |   |   |   |    |
| McIntyre Son & Co.     | Dry goods           | 4" | Gem         | 271      |   |   |   |    |
| McNabb R. & Co.        | Fortification lane  | 3" | "           | 431      |   |   |   |    |
| McLaughlin Bros & Co.  | 1831 Notre Dame     | 3" | "           | 766      |   |   |   |    |
| Normal School.         | Dry goods           | 1" | Crown       | 1023     |   |   |   |    |
| "                      | School              | 1" | "           | 781      |   |   |   |    |
| Nelson H. A. & Sons.   | Fancy goods         | 2" | Gem         | 623      |   |   |   |    |

SCHEDULE 11a.—METERS IN OPERATION, DECEMBER 31st 1890.—Continued.

| Name of consumers        | Streets.            | Description of Establishments | Size of Meters | Kind of meters | % of total | Private. | Paid by meter. | By meter. | All by meter. | Engines. | Elevators. | Specials.        |
|--------------------------|---------------------|-------------------------------|----------------|----------------|------------|----------|----------------|-----------|---------------|----------|------------|------------------|
| New Eng. Paper Co.       | 21 DeBresoles.      | Man. factories                | 3'             | Gem            | 874        | .....    | x              | .....     | .....         | .....    | x          | .....            |
| New York Life Ins Co.    | St James            | Insurance                     | 1'             | Crown          | .....      | Private. | .....          | .....     | .....         | x        | .....      | .....            |
| Notre Dame Church        | Notre Dame          | Church                        | 3'             | Gem.           | 598        | .....    | .....          | .....     | .....         | .....    | .....      | .....            |
| "                        | "                   | "                             | 3'             | "              | 785        | .....    | .....          | .....     | .....         | .....    | .....      | Organ motor      |
| "                        | "                   | "                             | 3'             | "              | 1031       | .....    | .....          | .....     | .....         | .....    | .....      | .....            |
| Notre Dame Hospital      | 1420                | Hospital.                     | 1'             | Crown          | 517        | .....    | .....          | .....     | x             | .....    | .....      | .....            |
| "                        | "                   | "                             | 1'             | Warthington    | 287        | .....    | .....          | .....     | .....         | .....    | .....      | .....            |
| "                        | Champ de Mars.      | "                             | 2'             | Union          | 624        | .....    | .....          | .....     | .....         | .....    | .....      | .....            |
| Notman & Son.            | 17 Bleury.          | Photographers.                | 2'             | Crown          | 797        | .....    | .....          | .....     | .....         | .....    | .....      | .....            |
| "                        | "                   | "                             | "              | "              | 758        | .....    | .....          | .....     | .....         | .....    | .....      | .....            |
| Nazareth Asylum          | 2009 St Catherine   | Home                          | 1'             | "              | 800        | .....    | .....          | .....     | .....         | .....    | .....      | .....            |
| "                        | 2013                | "                             | 1'             | "              | 585        | .....    | .....          | .....     | .....         | .....    | .....      | .....            |
| New City Gas Works       | 177 Harbour.        | Gas works                     | 4'             | Gem            | 978        | Private  | .....          | .....     | .....         | .....    | .....      | Office &c.       |
| "                        | "                   | "                             | 1'             | Crown          | 979        | .....    | .....          | .....     | .....         | .....    | .....      | .....            |
| "                        | "                   | "                             | 1'             | "              | 464        | .....    | .....          | .....     | .....         | .....    | .....      | .....            |
| "                        | Ottawa              | "                             | 1'             | "              | 415        | .....    | .....          | .....     | .....         | .....    | .....      | .....            |
| "                        | Dalhousie           | "                             | 1'             | Gem            | 761        | .....    | .....          | .....     | .....         | .....    | .....      | Organ motor.     |
| New Methodist Church     | St. Catherine.      | Church                        | 3'             | Crown          | 761        | .....    | .....          | .....     | .....         | .....    | .....      | .....            |
| Nordheimer Bros.         | 213 St. James.      | Offices.                      | 3'             | Gem            | 763        | .....    | .....          | .....     | .....         | .....    | x          | .....            |
| "                        | "                   | "                             | 4'             | "              | 838        | .....    | .....          | .....     | .....         | .....    | .....      | .....            |
| Olivet Bapt. Church      | 183 Mountain        | Church                        | 2'             | "              | 414        | .....    | .....          | .....     | .....         | .....    | .....      | Organ motor..... |
| O'Brien J.               | Radegonde           | Clothiers                     | 3'             | "              | 523        | .....    | .....          | .....     | .....         | .....    | x          | Livery.          |
| Osborne S.               | 77 Burnside.        | Livery                        | 1'             | Crown          | 680        | .....    | .....          | .....     | .....         | .....    | .....      | Small motor.     |
| Palmer & Son             | 1745 Notre Dame.    | Hardresser                    | 1'             | "              | 384        | .....    | .....          | .....     | .....         | .....    | .....      | Motor for grind- |
| Parisian Optical Co.     | 35 1/2 Lambert's H. | Optician                      | 1'             | "              | 850        | .....    | .....          | .....     | .....         | .....    | .....      | stone.           |
| Perrault Printing Co.    | St James            | Printing &c.                  | 1'             | Empire         | 858        | .....    | .....          | .....     | .....         | x        | .....      | .....            |
| "                        | "                   | "                             | 1'             | "              | 289        | .....    | .....          | .....     | .....         | .....    | .....      | .....            |
| Protestant School Comrs. | 600 Lagauchetière.  | School Commis                 | 1'             | Union          | 116        | .....    | .....          | .....     | x             | .....    | .....      | .....            |
| "                        | 347 St. Dominique.  | "                             | 1'             | Crown          | 627        | .....    | .....          | .....     | .....         | .....    | .....      | .....            |





SCHEDULE 11a.—METERS IN OPERATION. DECEMBER 31st 1890.—Continued.

| Name of consumers.   | Streets.          | Description of establishments. | Size of meters. | Kind of meters. | No. of meters. | Private. | Pay by meter. | By meter. | All by meter. | Engine. | Elevators. | Specials.       |
|----------------------|-------------------|--------------------------------|-----------------|-----------------|----------------|----------|---------------|-----------|---------------|---------|------------|-----------------|
| Rolland J B & Fils   | 8 St Vincent      | Stationers                     | 3"              | Gem             | 674            |          | X             |           |               |         | X          |                 |
| Richelieu Hotel      | 14 "              | "                              | 3"              | "               | 649            |          |               |           | X             |         | X          |                 |
|                      | 47 "              | Hotel                          | 1"              | Worthington     | 448            |          |               |           |               |         |            |                 |
| Royal Insurance      | Notre Dame        | Insurance                      | 4"              | Crown           | 1625           |          |               |           |               |         |            |                 |
| Robitaille A & Co    | Jacques Cartier   | Grocers                        | 12"             | Gem             | 191            |          |               |           |               |         | X          |                 |
| Riendeau J           | 30 " sq.          | Hotel                          | 1"              | Crown           | 1015           |          |               |           | X             |         |            |                 |
| Rheume Bros          | 50 St Dominique   | Carvers & gilders              | 6"              | Worthington     | 508            |          |               |           |               | X       |            |                 |
| Roberge & Stupple    | White's lane      | Machinists                     | 4"              | Empire          | 594            |          |               |           |               |         |            |                 |
| Rubenstein Bros      | 747 Craig         | Silver platers                 | 1"              | Union           | 303            |          |               |           |               |         |            |                 |
| Roberts G            | 597 LaGauchetière | Carpetier                      | 1"              | Empire          | 1035           |          |               |           |               |         |            |                 |
| Robillard & Co       | 282 St André      | Soda water &                   | 4"              | Crown           | 714            |          |               |           | X             |         |            |                 |
| Royal Electric Co    | St Ignace         | Electric light Co              | 2"              | Empire          | 918            |          |               |           |               | X       |            |                 |
| Robert J & Son       | 7 Papineau road   | Sawmills                       | 1"              | Worthington     | 596            |          |               |           |               |         |            |                 |
| Reinhardt G          | 8 Fortier         | Dwelling house                 | 1"              | Union           | 100            |          |               | X         |               |         |            | Dwelling house. |
| Reinhardt & Sons     | 341 Germain       | Brewers                        | 1"              | Worthington     | 678            |          |               |           | X             |         |            | For cooling.    |
|                      | "                 | "                              | 1"              | Crown           | 1014           |          |               |           | X             |         |            |                 |
| Royal Electric Co    | Queen             | Electric light Co              | 2"              | Empire          | 940            |          |               |           |               | X       |            |                 |
| Robertson J          | 172 Dalhousie     | Saw & Lead Works               | 1"              | "               | 1037           |          |               |           |               | X       |            |                 |
|                      | "                 | "                              | 1"              | Union           | 260            |          |               |           |               |         |            | Specials.       |
| Robertson T & Co     | 70 Common         | Lead Works                     | 1"              | Empire          | 817            |          |               |           |               | X       |            |                 |
| Robertson F          | 270 Wellington    | Coal merchants                 | 1"              | Union           |                |          |               |           |               | X       |            |                 |
| Redemptorist Fathers | 32 Basin          | Home                           | 1"              | Worthington     | 678            |          |               |           | X             |         |            |                 |
| Roberts J. W         | 336 St James      | Saddler                        | 1"              | Crown           | 580            |          |               |           |               |         |            | Motor.          |
| Rolland Bros         | "                 | Furniture                      | 3"              | Gem             | 934            |          |               |           |               |         | X          |                 |
| Robin & Saddler      | 2520 Notre Dame   | Belting & Co                   | 1"              | Worthington     | 586            |          |               |           | X             |         |            |                 |
| Reid R               | 1234 St Catherine | Marble cutters                 | 1"              | Union           | 740            |          |               |           |               |         |            | Gas engine.     |
| Robinson J. T        | 1791 Notre Dame   | Printers                       | 1"              | Crown           | 941            |          |               |           |               |         |            |                 |

| Robertson & Linton & Co. Lemoine | Dry goods          | Skating rink   | Skating rink. |
|----------------------------------|--------------------|----------------|---------------|
| Robinson S.                      | Dorchester.        | Hotel          | 45            |
| St. Lawrence Hall                | 189 St. James      | "              | 737           |
| "                                | "                  | "              | 798           |
| "                                | "                  | "              | 877           |
| "                                | "                  | "              | 880           |
| "                                | "                  | "              | 283           |
| "                                | "                  | "              | 1016          |
| Standard Ins Co                  | 159                | Insurance      | 1002          |
| "                                | "                  | "              | 699           |
| Star Printing Co                 | 163                | Printers, &c.  | 461           |
| Silverman Boulter & Co.          | 55 St. Peter       | Furrier's      | 467           |
| Spencer H. S. & Co.              | 449 St. Paul       | Shoe findings  | 267           |
| Simpson Hall & Miller            | Le Royer           | Electroplaters | 232           |
| "                                | "                  | "              | 582           |
| Sewing Cotton Agency             | "                  | Manufacturers  | 876           |
| Sénécal & Son                    | 20 St. Vincent     | Publishers     | 507           |
| Scott W. & Son                   | 18 St. Constant    | Cabinet makers | 828           |
| St. Lawrence Hotel               | 86 St. Lawrence    | Hotel          | 959           |
| St. Lawrence Dry Works           | 31 Bleury          | Dyers          | 16            |
| St. Fra Xavier Asylum            | 103 St. Urbain     | Asylum         | 739           |
| St. James Church                 | St. Denis          | Church         | 486           |
| Sisters of Providence            | 1198 Mignonne      | Nunnery        | 558           |
| "                                | 145 St. Denis      | "              | 579           |
| "                                | St. Hubert         | "              | Private       |
| "                                | 1631 St. Catherine | "              | "             |
| St. V. de Paul Reformatory       | 1189 Mignonne      | Reformatory    | 1026          |
| "                                | St. Denis          | "              | 562           |
| "                                | "                  | "              | 583           |
| "                                | "                  | "              | 561           |
| "                                | "                  | "              | 552           |
| Sisters of Providence            | 797 St. Catherine  | Nunnery        | 967           |
| "                                | Fullum             | "              | Private       |
| "                                | "                  | "              | "             |
| Stroud G. F.                     | 1519 St. Catherine | Teas &c.       | 4             |
| Strachan J. & Co.                | 36 Jac Cartier     | Soap works     | 617           |

SCHEDULE 11a.—METERS IN OPERATION. DECEMBER 31st 1890.—Continued.

| Name of consumers.        | Streets            | Description of establishments. | Size of meters. | Kind of meters. | No. of meters. | Private. | Paid by meter. | By meter. | All by meter. | Engines. | Elevator. | Specials.                       |
|---------------------------|--------------------|--------------------------------|-----------------|-----------------|----------------|----------|----------------|-----------|---------------|----------|-----------|---------------------------------|
| St. V. de Paul Asylum     | 46 Visitation      | Asylum                         | "               | Crown           | 317            |          | x              |           | x             |          |           | Organ motor.                    |
| St. Bridget's Church      | Maisonneuve        | Church                         | 1"              | Gem             | 3              |          | "              |           |               |          |           |                                 |
| St. Edwards Academy       | 107                | Academy                        | "               | Worthington     | 511            |          | "              |           | x             |          |           |                                 |
| St. Peter's Church        | 107 Visitation.    | Church                         | 2"              | Gem             | 489            |          | "              |           |               |          |           | Organ motor.                    |
| Sorgins & Keffer          | 188 Lafortune.     | Tanners                        | "               | Empire          | 919            |          | "              |           | x             |          |           |                                 |
| St. V. de Paul Church     | 700 St Catherine   | Church                         | 2"              | Gem             | 468            |          | "              |           |               |          |           | Organ motor.                    |
| Sheppard                  | 366 Fullum         | Brick makers                   | "               | Worthington     | 492            |          | "              |           |               | x        |           | Brick making.                   |
|                           |                    |                                | "               | Empire          | 937            |          | "              |           |               |          |           | "                               |
|                           |                    |                                | "               | Union           | 307            |          | "              |           |               |          |           | "                               |
| Smardon R                 | 35 William         | Manufacturers                  | 1"              | Union           | 752            |          | "              |           | x             |          |           |                                 |
| St. Edward's Refuge       | 109 Forfar         | Asylum                         | "               | Crown           |                |          | "              |           |               |          |           | When water is out of the canal. |
| Shearer J                 | St. Gabriel Locks. | Sash factory                   | "               | Worthington     |                | Private. | "              |           |               |          |           | "                               |
| Shearer J & Brown         | Richardson         | "                              | "               | Union           |                | "        | "              |           |               |          |           | "                               |
| Savage & Son              | 312 William        | Soap factory                   | 1"              | Worthington     | 697            |          | "              |           | x             |          |           |                                 |
| Small E A & Co            | 288 St James       | Clothiers                      | 3"              | Gem             | 944            |          | "              |           |               |          |           |                                 |
| Sough Am Trading Co.      | 425 St James       | Traders                        | "               | Empire          | 924            |          | "              |           |               | x        |           |                                 |
| St. James Hotel           | 538 St James.      | Hotel                          | "               | Crown           | 976            |          | "              |           | x             |          |           | Motor.                          |
| Stroud D                  | 2188 Notre Dame    | Teas &c                        | 1"              | "               | 795            |          | "              |           |               |          |           |                                 |
| St. Antoine Academy       | 856 Lagauchetière  | Academy                        | "               | Empire          | 920            |          | "              |           | x             |          |           | Organ motor                     |
| St. Andrews Church        | "                  | Church                         | 1"              | Gem             |                | Private  | "              |           |               |          |           |                                 |
| Slater G T & Sons         | Juror              | Boots & shoes.                 | "               | Empire          | 1000           |          | "              |           |               |          |           |                                 |
| St. Bridget's Home        | 745 Lagauchetière  | Asylum                         | 1"              | Worthington     | 667            |          | "              |           | x             |          |           |                                 |
| St Patrick's Nun's school | 79 Alexander       | School                         | "               | Union           | 129            |          | "              |           | x             |          |           |                                 |
| Patrick's O Asylum        | 774 Dorchester     | Asylum                         | 1"              | Crown           | 575            |          | "              |           | x             |          |           |                                 |
| Sim's A H & Co.           | 54 Latour.         | Shirt manuf                    | 2"              | Worthington     | 458            |          | "              |           | x             |          |           | Organ motor.                    |
| St. Paul Church           | 846 Dorchester     | Church                         | 2"              | Union           |                | Private. | "              |           |               |          |           |                                 |
| St. James Church          | University         | Club                           | 1"              | Empire          | 812            |          | "              |           | x             |          |           |                                 |
| Star & Kinsella           | 70 Mansfield       | Livery                         | "               | Worthington     | 228            |          | "              |           | x             |          |           |                                 |
| St. Georges Church        | Stanley            | Church                         | 2"              | Gem.            |                | Private  | "              |           |               |          |           | Organ motor.                    |

| Street                    | Business          | Size | Water       | Boilers  | Notes  |
|---------------------------|-------------------|------|-------------|----------|--|
| Stanton Bros & Co         | Recollet          | 3"   | Worthington | 721      |  |
| Schultz Ed & Co           | 186 McGill        | 3"   | Gem         | 701      | Private.                                     |
| Smith C                   | 290 University    | 1"   | Equitable   | 723      |  |
| Shanrock Lacrosse Gr's    | St Catherine      | 1"   | Crown       | 728      |  |
| Stewart B D               | Frontenac         | 1"   | Union       | 280      | water registered through the abattoir meter. |
| Temple Building           | 185 St James      | 1"   | Empire      | 857      |  |
| Trotter Bros              | 32 St Nicolas     | 2"   | Gem         | 470      |  |
| Turner Roge & Co          | 309 Commissioners | 3"   | "           | 482      |  |
| Tompson B & L H & Co      | 38 St Sulpice     | 3"   | "           | 759      |  |
| Teller Rothwell & Co      | Le Royer          | 1"   | Empire      | 829      |  |
| Thibaudeau Bros & Co      | 332 St. Paul      | 1"   | "           | 804      |  |
| Thourel & Fitzgibbon & Co | 140 McGill        | 3"   | Gem         | 1027     |  |
| Tremblay F                | 92 Prince         | 1"   | Empire      | 888      |  |
| Tyler Jona & Co           | 290 St. James     | 3"   | Gem         | 946      |  |
| Tee's & Co                | 300               | 3"   | Crown       | 1029     |  |
| Taylor Manuf. Co          | William           | 1"   | Union       | 199      |  |
| Thompson J                | 290 Guy           | 1"   | Worthington | 534      |  |
| Thurston J D              | 749 Craig         | 1"   | Empire      | 819      |  |
| Turkish Baths             | 140 St. Monique   | 4"   | Crown       | 1045     |  |
| "                         | "                 | 1"   | Worthington | 691      |  |
| "                         | "                 | 1"   | Crown       | 410      |  |
| "                         | "                 | 1"   | Worthington | 679      |  |
| "                         | "                 | 1"   | Crown       | 473      |  |
| "                         | "                 | 1"   | Gem         | Private. |  |
| Troy Steam Laundry        | 140 St. Peter     | 2"   | Worthington | 459      |  |
| Thompson & Co             | 7124 Craig        | 1"   | Empire      | 815      |  |
| Tooke Bros                | 520 St Paul       | 3"   | Worthington | 606      |  |
| Tees Wilson & Co          | 70 St. Peter      | 3"   | Gem         | Private. |  |
| Tester J N. & Co          | 68 McGill         | 3"   | Empire      | 890      |  |
| Victoria Bottling Co      | 20 St. Dizier     | 3"   | Gem         | 770      |  |
| Viau & Freres             | 1294 Notre Dame   | 1"   | Worthington | 516      |  |
| "                         | "                 | 1"   | Empire      | 1042     |  |
| Valade & Sons             | 65 Chaboillez sq  | 1"   | Crown       | 748      |  |
| Vincent J B               | 228 Richmond      | 1"   | Empire      | 927      |  |
| Victoria Rifles           | 37 Cathcart       | 1"   | Crown       | Private. |  |
| Victoria Skating Rink     | 49 Drummond       | 1"   | "           | 65       |  |
| Waddell Building          | 28 St John        | 3"   | Gem         | 936      |  |
| Williams Manuf. Co        | 1733 Notre Dame   | 1"   | Crown       | 980      | Small motor.                                 |

## SCHEDULE 11a.—METERS IN OPERATION, DECEMBER 31st 1900.—Continued

| Name of consumers       | Streets          | Description of establishments | No. of meters | Kind of meters | No. of meters | Private | Paid by meter | By meter | All by meter | Engines | Electricity | Specials     |
|-------------------------|------------------|-------------------------------|---------------|----------------|---------------|---------|---------------|----------|--------------|---------|-------------|--------------|
| Walker J R.             | Common           | Merchant                      | 3             | Gen            | 700           | ...     | ...           | ...      | ...          | ...     | ...         | ...          |
| Warren Scale Co.        | 450 St Paul      | Manufacturers                 | 4             | Empire         | 887           | ...     | ...           | ...      | ...          | ...     | ...         | ...          |
| Wilson Estate           | 11 Place I Armes | Offices                       | 4             | Gen            | ...           | Private | ...           | ...      | ...          | ...     | ...         | ...          |
| White R.                | 200 Craig        | Tools & shoes                 | ...           | Worthington    | 318           | ...     | ...           | ...      | ...          | ...     | ...         | ...          |
| Witham J & Co.          | 43 McCle         | ...                           | 4             | Empire         | 925           | ...     | ...           | ...      | ...          | ...     | ...         | ...          |
| Watson J C.             | De Gra Noun      | Paints & wall paper           | ...           | Worthington    | 820           | ...     | ...           | ...      | ...          | ...     | ...         | ...          |
| Witness Printing Co.    | 12 St James      | Printing Co                   | ...           | Gen            | 286           | ...     | ...           | ...      | ...          | ...     | ...         | ...          |
| Webster House           | 534              | Hotel                         | ...           | Worthington    | 418           | ...     | ...           | ...      | ...          | ...     | ...         | ...          |
| Wells & Richardson & Co | 200 Mountain     | Dye-stuffs                    | ...           | Crown          | 909           | ...     | ...           | ...      | ...          | ...     | ...         | ...          |
| Windsor Hotel           | Peel             | Hotel                         | ...           | Gen            | 777           | ...     | ...           | ...      | ...          | ...     | ...         | ...          |
| "                       | Dorchester       | "                             | ...           | Crown          | 898           | ...     | ...           | ...      | ...          | ...     | ...         | ...          |
| "                       | Stanley          | "                             | ...           | "              | 402           | ...     | ...           | ...      | ...          | ...     | ...         | ...          |
| Women Exchange          | 250 St Catherine | Home                          | 4             | "              | 600           | ...     | ...           | ...      | ...          | ...     | ...         | ...          |
| Wilson J C.             | 700 Craig        | Manufacturers                 | ...           | Empire         | 867           | ...     | ...           | ...      | ...          | ...     | ...         | ...          |
| Wilder H A. & Co.       | 232 McGill       | Carriage                      | ...           | Gen            | 923           | ...     | ...           | ...      | ...          | ...     | ...         | ...          |
| Walker D.               | 254 St James     | Contractors                   | ...           | Gen            | 430           | ...     | ...           | ...      | ...          | ...     | ...         | ...          |
| Walker Bros & Co.       | 84 St. Peter     | Dry goods                     | 3             | Crown          | 904           | ...     | ...           | ...      | ...          | ...     | ...         | Small motor. |
| Wilson J H.             | 1874 Notre Dame  | Hardware                      | ...           | Gen            | 771           | ...     | ...           | ...      | ...          | ...     | ...         | ...          |
|                         |                  |                               | ...           | "              | 390           | ...     | ...           | ...      | ...          | ...     | ...         | ...          |



[illegible]











## No. 1—Siphon, allowing the Pipes, &amp;c.—Continued.

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|---------------|------|------|------|------|------|------|-----|---|---|---|----|---|----|----|------|------|-----|
| Harmony       | 1024 | 3306 | 1834 | 1517 | 1323 | 1469 | 154 | 1 | 5 | 6 | 11 | 7 | 36 | 14 | 6822 | 4255 | 393 |
| Chausse       |      |      |      |      |      |      |     |   |   |   |    |   |    |    |      |      |     |
| St. Alphonse  |      |      |      |      |      |      |     |   |   |   |    |   |    |    |      |      |     |
| Nilede        |      |      |      |      |      |      |     |   |   |   |    |   |    |    |      |      |     |
| Grant         |      |      |      |      |      |      |     |   |   |   |    |   |    |    |      |      |     |
| Burnett       |      |      |      |      |      |      |     |   |   |   |    |   |    |    |      |      |     |
| Rock Lane     |      |      |      |      |      |      |     |   |   |   |    |   |    |    |      |      |     |
| Noire-Dame    | 1024 | 904  |      | 8    | 56   | 120  | 105 | 1 | 1 | 1 | 2  |   | 4  | 2  | 254  | 10   | 1   |
| Visitation    |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 87   | 7    |     |
| St. Rose      |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 213  | 11   |     |
| St. Ignace    |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 128  | 16   |     |
| Poupart       |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 597  | 38   |     |
| Parbrenais    |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 673  | 44   | 20  |
| Iberville     |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 80   | 6    |     |
| Dufrene       |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 28   | 3    |     |
| Craig         |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 113  | 6    |     |
| Kent          |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 306  | 24   |     |
| DeLorimier    |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 935  | 48   | 4   |
| LaFontaine    |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 301  | 14   |     |
| Dorchester    |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 216  | 14   |     |
| Mignonne      |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 117  | 6    | 6   |
| Lagauchetiere |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 142  | 14   |     |
| Papineau Road |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 155  | 3    | 1   |
| Plessis       |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 220  | 34   |     |
| Pant          |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 271  | 25   |     |
| Gain          |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 141  | 9    |     |
| Voligeurs     |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 19   | 3    |     |
| Ontario       |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 80   | 4    |     |
| St. Catherine |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 185  | 16   |     |
| Shaw          |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 148  | 9    |     |
| Fullum        |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 69   | 5    |     |
| Champlain     |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 149  | 8    |     |
| Maisonneuve   |      |      |      |      |      |      |     |   |   |   |    |   |    |    | 92   | 4    |     |
| Total         | 1024 | 3306 | 1834 | 1517 | 1323 | 1469 | 154 | 1 | 5 | 6 | 11 | 7 | 36 | 14 | 6822 | 4255 | 393 |



No. 12—Schedule showing the Pipes &c.—Continued.

| NAME OF<br>STREETS | Length in feet of cast iron pipes. |    |    |    |    |    |   |   |   |       | No. of Valves. |    |    |    |    |    |   |   |   |       | Wrought<br>Iron Pipes. | Hydrants. | Length of<br>Lead Pipes<br>in feet. | Houses<br>Supplied. | Brass cocks. | Air cocks. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |
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|                    | Length in feet of cast iron pipes. |    |    |    |    |    |   |   |   |       | No. of Valves. |    |    |    |    |    |   |   |   |       |                        |           |                                     |                     |              |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |
|                    | 30                                 | 24 | 20 | 16 | 12 | 10 | 8 | 6 | 4 | Total | 30             | 24 | 20 | 16 | 12 | 10 | 8 | 6 | 4 | Total |                        |           |                                     |                     |              |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |
| St. Antoine        |                                    |    |    |    |    |    |   |   |   |       |                |    |    |    |    |    |   |   |   |       |                        |           |                                     |                     |              |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | </ |



No. 12.—Schedule showing the Pipes, &c.—Continued.

| NAME OF<br>STREETS. | Length in feet of cast iron pipes. |     |     |     |     |     |     |    |    |        | No. of Valves. |     |     |     |     |     |    |    |    | Wrought<br>Iron Pipes. | Hydrants. | Length of<br>Lead Pipes<br>in feet. | Houses<br>Supplied. | Brass cocks. | Air cocks. |        |  |  |  |  |  |  |
|---------------------|------------------------------------|-----|-----|-----|-----|-----|-----|----|----|--------|----------------|-----|-----|-----|-----|-----|----|----|----|------------------------|-----------|-------------------------------------|---------------------|--------------|------------|--------|--|--|--|--|--|--|
|                     |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
|                     | 30"                                | 24" | 20" | 16" | 12" | 10" | 8"  | 6" | 4" | Total. | 30"            | 24" | 20" | 16" | 12" | 10" | 8" | 6" | 4" |                        |           |                                     |                     |              |            | Total. |  |  |  |  |  |  |
| St. Gob. W. Con.    |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Brou't forw         |                                    |     |     |     |     |     |     |    | 99 | 99     |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| St Charles.         |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Ryder               |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Rosary              |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Paris               |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Mullins.            |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Magdalen            |                                    |     |     |     |     |     | 101 |    |    | 101    |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Island              |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Coleraine           |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Alwater.            |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Favard              |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Gourgeois.          |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Grand Trunk.        |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Quasbrook           |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Charron             |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Wellington          |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Napoleon Road.      |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Centr.              | 2178                               |     |     |     | 198 |     | 46  | 9  | 6  | 2437   |                | 3   |     |     | 4   | 1   | 2  |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Manufacture         |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| St. Patrick.        |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |
| Edinburg            |                                    |     |     |     |     |     |     |    |    |        |                |     |     |     |     |     |    |    |    |                        |           |                                     |                     |              |            |        |  |  |  |  |  |  |

RECAPITULATION.—No. 12.—Schedule showing the Pipes, Hydrants, Valves, Services, &c. laid in the City of Montreal during the year 1890.

| WARDS.          | Length in feet of cast iron pipes. |       |       |       |       |       |       |       |       |        | No. of Valves. |       |       |       |       |       |       |       |       |        | Wrought Iron Pipes. | Hydrants. | Length of Lead Pipes in feet. | Houses Supplied. | Brass cocks. | Air cocks. |
|-----------------|------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|---------------------|-----------|-------------------------------|------------------|--------------|------------|
|                 | Length in feet of cast iron pipes. |       |       |       |       |       |       |       |       |        | No. of Valves. |       |       |       |       |       |       |       |       |        |                     |           |                               |                  |              |            |
|                 | 30"                                | 24"   | 20"   | 16"   | 12"   | 10"   | 8"    | 6"    | 4"    | Total. | 30"            | 24"   | 20"   | 16"   | 12"   | 10"   | 8"    | 6"    | 4"    | Total. |                     |           |                               |                  |              |            |
| East.....       | .....                              | ..... | ..... | ..... | ..... | ..... | 12    | ..... | 12    | .....  | .....          | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .....  | 1                   | 187       | 16                            | 2                | 14           |            |
| Center.....     | .....                              | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .....  | .....          | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .....  | .....               | .....     | 283                           | 23               | 2            | 21         |
| West.....       | .....                              | ..... | ..... | ..... | 61117 | 313   | 61    | 41    | 1536  | .....  | .....          | ..... | ..... | 1     | 3     | 4     | 4     | 4     | 16    | .....  | 6                   | 52        | 2                             | .....            | 2            |            |
| St. Ann.....    | 1219                               | 279   | 256   | 6612  | 40    | 2135  | 111   | 176   | 13834 | .....  | 4              | ..... | 1     | 10    | 3     | 10    | 3     | 10    | 41    | .....  | 30                  | 2752      | 126                           | 7                | 119          |            |
| St. Antoine.... | 2188                               | 812   | 6     | 2336  | 1326  | 4528  | 703   | 939   | 23858 | .....  | 2              | 1     | 2     | 23    | 7     | 22    | 9     | 22    | 88    | .....  | 52                  | 678       | 274                           | 45               | 219          |            |
| St. Lawrence    | 5                                  | ..... | ..... | ..... | 5500  | 2356  | 696   | 477   | 142   | 9376   | 1              | ..... | ..... | ..... | 10    | 7     | 6     | 1     | 2     | 27     | .....               | 21        | 6560                          | 328              | 9            | 319        |
| St. Louis.....  | .....                              | ..... | ..... | ..... | 6689  | 546   | 748   | 656   | 299   | 8938   | .....          | ..... | ..... | ..... | 14    | 2     | 7     | 4     | 9     | 36     | .....               | 23        | 2471                          | 162              | 2            | 160        |
| St. James..     | .....                              | 4350  | 96    | 3809  | 410   | 4391  | 323   | 69    | 12448 | .....  | 2              | ..... | ..... | 12    | 6     | 11    | 4     | 7     | 43    | .....  | 26                  | 5497      | 293                           | 1                | 292          |            |
| St. Mary.....   | 024                                | ..... | ..... | ..... | 3306  | 1834  | 1517  | 1323  | 116   | 9130   | 1              | ..... | 1     | 5     | 6     | 11    | 8     | 5     | 36    | .....  | 14                  | 6822      | 425                           | 32               | 393          |            |
| St. Jean-Bapt.  | .....                              | ..... | ..... | ..... | 810   | ..... | 3167  | 2092  | ..... | 6099   | .....          | ..... | ..... | ..... | ..... | 3     | 5     | ..    | 8     | .....  | 16                  | 10878     | 650                           | ...              | 650          |            |
| Hochelaga ..    | .....                              | ..... | ..... | ..... | 836   | 176   | 826   | 514   | 144   | 2496   | .....          | ..... | ..... | 1     | ..... | 1     | 3     | 1     | 6     | .....  | 6                   | 4493      | 283                           | 33               | 249          |            |
| St. Gabriel...  | 2178                               | ..... | ..... | ..... | 198   | ..... | 1068  | 135   | 125   | 3704   | 3              | ..... | ..... | 4     | 2     | 2     | 1     | 2     | 14    | .....  | 5                   | 5000      | 252                           | .....            | 252          |            |
| Totals....      | 53609                              | 5441  | 358   | 40130 | 8011  | 18389 | 7407  | 2101  | 91451 | 1      | 10             | 3     | 4     | 80    | 36    | 77    | 42    | 62    | 315   | .....  | 200                 | 51785     | 1834                          | 133              | 2700         |            |

Schedule No 13.—Showing the Pipes, Hydrants and Valves laid down and the number of Houses supplied with water in the City of Montreal up to 1st January 1891.

| WARDS                    | MAIN PIPES |       |      |      |        |       |       |        |        |       |       |        |       | LEAD<br>P.PRS | VALVES |      |     |     |     |     |     |    |       |       |      |       | HYDRANTS |         | SERVICES |  |
|--------------------------|------------|-------|------|------|--------|-------|-------|--------|--------|-------|-------|--------|-------|---------------|--------|------|-----|-----|-----|-----|-----|----|-------|-------|------|-------|----------|---------|----------|--|
|                          |            |       |      |      |        |       |       |        |        |       |       |        |       |               |        |      |     |     |     |     |     |    |       |       |      |       | Public   | Private |          |  |
|                          | 30         | 24    | 20   | 16   | 12     | 10    | 8     | 6      | 4      | 3     | 1 1/2 | TOTAL  | 30    |               | 24     | 20   | 16  | 12  | 10  | 8   | 6   | 4  | 3 1/2 | TOTAL |      |       |          |         |          |  |
| East .....               |            |       |      |      | 1400   | 6121  | 312   | 2324   | 7451   | 713   | 80    | 18459  |       |               |        |      | 1   | 8   | 4   | 12  | 33  | 2  | 60    | 41    | 810  |       |          |         |          |  |
| Center .....             | 1222       |       |      |      | 2544   | 3758  | 12    | 3503   | 6518   | 161   | 35    | 17726  | 165   | 2             |        |      | 5   | 8   | 4   | 10  | 29  | 7  | 65    | 30    | 633  |       |          |         |          |  |
| West .....               | 1190       |       |      | 634  | 3778   | 670   | 1042  | 5589   | 6185   | 585   |       | 25533  |       |               | 1      |      | 6   | 19  | 8   | 12  | 36  | 18 | 100   | 46    | 828  |       |          |         |          |  |
| St. Anne .....           | 1219       | 273   |      |      | 12793  | 20129 | 3006  | 2398   | 53918  | 53    |       | 116047 | 1031  | 4             |        | 1    | 24  | 29  | 13  | 64  | 95  | 3  | 234   | 180   | 3989 |       |          |         |          |  |
| St. Antoine .....        | 31         |       |      | 2006 | 52627  | 13121 | 4528  | 14520  | 101047 | 523   | 367   | 226734 | 1618  | 6             | 3      |      | 75  | 29  | 32  | 91  | 194 | 5  | 438   | 309   | 7468 |       |          |         |          |  |
| St. Lawrence .....       | 2140       | 3640  |      |      | 12009  | 737   | 1878  | 23653  | 25203  |       |       | 74660  | 694   | 1             |        |      | 19  | 13  | 16  | 56  | 51  | 1  | 158   | 108   | 3706 |       |          |         |          |  |
| St. Louis .....          | 1645       |       |      |      | 10133  | 9408  | 829   | 22249  | 22228  |       |       | 76559  | 1062  |               |        |      | 21  | 10  | 7   | 48  | 46  |    | 133   | 113   | 4136 |       |          |         |          |  |
| St. James .....          | 2488       |       | 1356 |      | 13372  | 880   | 3834  | 23222  | 43240  |       |       | 96482  | 620   | 1             | 2      |      | 20  | 4   | 13  | 65  | 60  |    | 166   | 133   | 6403 |       |          |         |          |  |
| St. Mary .....           | 2585       | 7664  |      | 100  | 3703   | 10178 | 1674  | 49311  | 39516  | 60    |       | 124821 | 2400  | 1             | 4      | 1    | 25  | 18  | 11  | 104 | 65  | 1  | 230   | 158   | 6619 |       |          |         |          |  |
| St. Jean Baptiste .....  |            |       |      |      | 11916  | 363   | 3241  | 26307  | 237    |       |       | 42691  |       |               |        | 16   |     | 3   | 40  | 2   |     |    | 61    | 115   | 3295 |       |          |         |          |  |
| St. Michel .....         | 3700       |       |      |      | 6803   | 7226  | 819   | 13663  | 15977  |       |       | 48203  | 455   |               |        |      | 8   | 5   | 1   | 26  | 25  | 1  | 66    | 59    | 1743 |       |          |         |          |  |
| St. Gabriel .....        | 2178       |       |      |      | 198    | 26    | 1186  | 7369   | 459    |       |       | 11416  |       |               | 3      |      | 4   | 2   | 4   | 10  | 11  |    | 34    | 60    | 778  |       |          |         |          |  |
| Total .....              | 10128      | 27606 | 1635 | 1032 | 140612 | 86142 | 22431 | 150020 | 330058 | 2095  | 482   | 479331 | 10015 | 420           | 5      | 7224 | 145 | 116 | 538 | 647 | 18  | 1  | 1745  | 1352  | 38   | 40408 | 3        |         |          |  |
| Residing main .....      | 1612       | 27709 |      |      |        |       |       | 15     |        |       |       | 45500  |       | 1324          |        | 1    | 2   |     | 2   |     | 3   |    | 42    | 4     |      |       |          |         |          |  |
| Exhibition Gr's .....    |            |       |      |      |        |       |       | 5184   |        |       |       | 5184   |       |               |        |      |     |     |     |     |     |    | 9     |       |      |       |          |         |          |  |
| Gr'd T. K. R. y Pl ..... |            |       |      |      |        |       |       | 7737   | 1861   |       |       | 9598   |       |               |        |      |     |     |     |     |     |    |       |       |      |       |          |         |          |  |
| St. Charles .....        |            |       |      |      |        |       |       |        |        |       |       |        |       |               |        |      |     |     |     |     |     |    |       |       |      |       |          |         |          |  |
| Grand Total .....        | 29300      | 55315 | 6635 | 1032 | 142286 | 86142 | 22431 | 257772 | 337613 | 20235 | 482   | 93913  | 10045 | 1714          | 5      | 8226 | 145 | 116 | 540 | 650 | 18  | 1  | 1790  | 1356  | 58   | 40411 |          |         |          |  |

| Month                      | At W. W. shop<br>Lagauchetière street<br>cor. St. Chas. Bor. | Central Fire Station<br>Craig street | Fire Station No 2<br>St. Gabriel St. | Fire Station No 3<br>Wellington St. | Fire Station No 4<br>Chabolliez Sqr | Fire Station No 5<br>St. Catherine St. | Fire Station No. 6<br>Ontario St. | Fire Station No 7<br>Delhousie Sqr. | Fire Station No. 8<br>Craig St. | Fire Station No. 9<br>Centre St. | Fire Station No 10<br>St. Catherine St. | Fire Station No. 11<br>Ontario St. | Fire Station No. 12<br>Beignures St. | Fire Station No. 13<br>Deseray St. | Fire Station No. 14<br>St. Dominique St.<br>St. J. Bile Ward. | Fire Station No 15<br>Island St.<br>(St. Gabriel Ward.) | Average<br>surface of water in<br>McTavish Reservoir. |
|----------------------------|--|--------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|--|-----------------------------------|-------------------------------------|---------------------------------|----------------------------------|---|------------------------------------|--------------------------------------|------------------------------------|---|---|---|
| Height above<br>datum .... | 42.00  | 32.00                                | 57.00                                | 27.00                               | .....                               | 47.00                                  | 66.00                             | 70.50                               | 43.00                           | 26.00                            | 130.00                                  | 70.00                              | 36.40                                | 44.00                              | .....   | .....   | 203.00  |
| January .....              | 65.00  | 72.00                                | 68.00                                | 78.00                               | 77.00                               | 43.00                                  | 65.00                             | 56.00                               | 71.00                           | 76.00                            | 30.00                                   | 66.00                              | 72.00                                | 69.00                              | 110.00  | 78.00   | 04.43   |
| February ..                | 65.00  | 72.00                                | 70.00                                | 79.00                               | 77.00                               | 45.00                                  | 65.00                             | 56.00                               | 71.00                           | 77.00                            | 30.00                                   | 66.00                              | 72.00                                | 68.00                              | 110.00  | 79.00   | 204.27  |
| March .....                | 65.00  | 72.00                                | 70.00                                | 79.00                               | 78.00                               | 47.00                                  | 65.00                             | 57.00                               | 71.00                           | 77.00                            | 30.00                                   | 66.00                              | 72.00                                | 69.00                              | 110.00  | 77.00   | 204.54  |
| April .....                | 65.00  | 72.00                                | 69.00                                | 78.00                               | 78.00                               | 47.00                                  | 65.00                             | 58.00                               | 71.00                           | 77.00                            | 30.00                                   | 66.00                              | 72.00                                | 72.00                              | 111.00  | 78.00   | 204.71  |
| May .....                  | 65.00  | 72.00                                | 69.00                                | 79.00                               | 78.00                               | 47.00                                  | 65.00                             | 57.00                               | 70.00                           | 77.00                            | 30.00                                   | 66.00                              | 72.00                                | 72.00                              | 112.00  | 78.00   | 204.32  |
| June .....                 | 65.00  | 72.00                                | 67.00                                | 79.00                               | 78.00                               | 45.00                                  | 65.00                             | 57.00                               | 69.00                           | 77.00                            | 29.00                                   | 66.00                              | 73.00                                | 69.10                              | 112.00  | 77.00   | 203.70  |
| July .....                 | 65.00  | 72.00                                | 67.00                                | 79.00                               | 78.00                               | 45.00                                  | 65.00                             | 57.00                               | 69.00                           | 77.00                            | 30.00                                   | 66.00                              | 73.00                                | 69.00                              | 111.00  | 80.00   | 200.97  |
| August .....               | 65.00  | 72.00                                | 68.00                                | 79.00                               | 77.00                               | 47.00                                  | 65.00                             | 57.00                               | 70.00                           | 77.00                            | 30.00                                   | 66.00                              | 77.00                                | 72.00                              | 111.00  | 81.00   | 203.01  |
| September ..               | 65.00  | 72.00                                | 74.00                                | 79.00                               | 78.00                               | 46.00                                  | 65.00                             | 57.00                               | 70.00                           | 77.00                            | 29.00                                   | 66.00                              | 77.00                                | 71.00                              | 113.00  | 80.00   | 203.65  |
| October .....              | 65.00  | 72.00                                | 73.00                                | 79.00                               | 79.00                               | 46.00                                  | 65.00                             | 57.00                               | 70.00                           | 77.00                            | 30.00                                   | 66.00                              | 77.00                                | 71.00                              | 112.00  | 77.00   | 195.94  |
| November ..                | 65.00  | 72.00                                | 74.00                                | 79.00                               | 79.00                               | 46.00                                  | 65.00                             | 57.00                               | 70.00                           | 77.00                            | 30.00                                   | 66.00                              | 77.00                                | 71.00                              | 113.00  | 79.00   | 202.43  |
| December ..                | 65.00  | 72.00                                | .....                                | 79.00                               | 79.00                               | 45.00                                  | 65.00                             | 59.00                               | 70.00                           | 77.00                            | 29.00                                   | 66.00                              | 77.00                                | 71.00                              | 113.00  | 70.00   | 204.36  |
| Average 1890               | 65.00  | 72.00                                | 69.00                                | 78.00                               | 78.00                               | 45.00                                  | 65.00                             | 57.00                               | 70.00                           | 77.00                            | 30.00                                   | 66.00                              | 74.00                                | 70.00                              | 111.00  | 78.00   | 203.03  |
| " 1899                     | 65.00  | 72.00                                | 68.00                                | 78.00                               | 78.00                               | 43.00                                  | 65.00                             | 57.00                               | 71.00                           | 73.00                            | 30.00                                   | 66.00                              | 71.00                                | 69.00                              | 103.00  | 71.00   | 203.55  |

**No. 15.—SCHEDULE showing the position of Public Fountains erected in the City of Montreal up to January 1891.**

| No. | LOCATION.                                  | Cast Iron Basins. | Stone and Cement Basins. | Stone Fountains. | Cast Iron Fountains. | Wood Fountains. | Cast Iron Drinking Troughs. | Total |
|-----|--|-------------------|--------------------------|------------------|----------------------|-----------------|-----------------------------|-------|
| 1   | Beaver Hall Square .....                   |                   |                          |                  | 1                    |                 |                             | 1     |
| 2   | Bellevue Park .....                        | 1                 |                          |                  |                      |                 |                             | 1     |
| 3   | Beury and Dorchester .....                 |                   |                          | 1                |                      |                 |                             | 1     |
| 4   | Bonsecours Market .....                    |                   |                          |                  |                      |                 |                             |       |
| 5   | Chaboultier Square .....                   |                   |                          |                  |                      |                 | 1                           | 1     |
| 6   | Cherrier Square .....                      |                   |                          |                  | 2                    |                 |                             | 2     |
| 7   | Colborne at Flour Shed .....               |                   |                          |                  | 1                    |                 | 1                           | 2     |
| 8   | Court House Square .....                   | 2                 | 1                        | 2                |                      |                 |                             | 5     |
| 9   | Craig at Victoria Square .....             |                   |                          | 1                |                      |                 |                             | 1     |
| 10  | Craig opposite Drill Hall .....            |                   |                          |                  | 1                    |                 | 1                           | 2     |
| 11  | Custom House Square .....                  |                   |                          |                  | 1                    |                 | 1                           | 2     |
| 12  | Dorchester at Dominion Square .....        |                   |                          |                  | 1                    |                 | 1                           | 2     |
| 13  | Dufferin Square .....                      |                   |                          |                  | 1                    |                 | 1                           | 2     |
| 14  | Furford near Notre Dame .....              |                   |                          |                  | 1                    |                 | 1                           | 2     |
| 15  | Godbault and St. Lawrence .....            |                   |                          |                  | 1                    |                 | 1                           | 2     |
| 16  | Jacques Cartier Square and St. Paul .....  | 1                 |                          |                  | 1                    |                 | 1                           | 3     |
| 17  | Inspector at Hay Market .....              |                   |                          |                  |                      |                 | 1                           | 1     |
| 18  | McTavish street, opposite Réservoir .....  |                   |                          |                  | 1                    |                 |                             | 1     |
| 19  | McGill and Common .....                    |                   |                          | 1                |                      |                 | 1                           | 2     |
| 20  | Mill street, at Waste Weir .....           |                   |                          |                  |                      | 1               | 1                           | 2     |
| 21  | Notre Dame near Ruisseau Migeon .....      |                   |                          |                  |                      |                 | 1                           | 1     |
| 22  | Notre Dame and Suzanne .....               |                   |                          |                  | 1                    |                 | 1                           | 2     |
| 23  | Ontario opposite Reformatory grounds ..... |                   |                          |                  |                      | 1               | 1                           | 2     |
| 24  | Ontario and Champlain .....                |                   |                          |                  |                      |                 | 1                           | 1     |
| 25  | Ottawa, corner Dalhousie .....             |                   |                          |                  |                      |                 | 1                           | 1     |
| 26  | Papineau, north of Sherbrooke .....        |                   |                          |                  |                      | 1               | 1                           | 2     |
| 27  | Papineau Square .....                      |                   | 1                        |                  |                      | 1               | 1                           | 3     |
| 28  | Park Avenue and St. Jean-Baptiste .....    |                   |                          |                  |                      |                 | 1                           | 1     |
| 29  | Phillips Square .....                      |                   |                          |                  | 1                    |                 |                             | 1     |
| 30  | Phillips Square and St. Catherine .....    |                   |                          |                  |                      |                 | 1                           | 1     |
| 31  | Place d'Armes .....                        | 2                 | 1                        |                  |                      |                 |                             | 3     |
| 32  | Place and Common .....                     |                   |                          |                  | 1                    |                 | 1                           | 2     |
| 33  | Rachel and Champlain .....                 |                   |                          |                  | 1                    |                 | 1                           | 2     |
| 34  | Richmond Square .....                      |                   |                          |                  | 1                    |                 | 1                           | 2     |
| 35  | Seigneurs and William .....                |                   |                          |                  | 1                    |                 | 1                           | 2     |
| 36  | Sherbrooke, near Drummond .....            |                   | 1                        |                  |                      |                 | 1                           | 2     |
| 37  | Sherbrooke, corner Gay .....               |                   |                          |                  |                      |                 | 1                           | 1     |
| 38  | St. Ann's Market .....                     |                   |                          |                  |                      | 2               |                             | 2     |
| 39  | St. Antoine Market .....                   |                   |                          |                  | 1                    |                 | 1                           | 2     |
| 40  | St. Catherine and Western Park .....       |                   |                          |                  |                      |                 | 1                           | 1     |
| 41  | St. Catherine and DeLoraine .....          |                   |                          |                  |                      | 1               | 1                           | 2     |
| 42  | St. Gabriel Market .....                   |                   |                          |                  |                      | 1               |                             | 1     |
| 43  | St. Louis Square .....                     | 1                 |                          |                  | 2                    |                 |                             | 3     |

## No. 15.—SCHEDULE.—Continued.

| No. | LOCATION.                             | Cast Iron Basins. | Stone and Cement Basins. | Stone Fountains. | Cast Iron Fountains. | Wood Fountains. | Cast Iron Cattle Drinking Troughs. | Number of Jets. |
|-----|---------------------------------------|-------------------|--------------------------|------------------|----------------------|-----------------|------------------------------------|-----------------|
| 44  | St. Patrick and Richmond .....        | .....             | .....                    | .....            | 1                    | .....           | 1                                  | 1               |
| 45  | St. Patrick and Napoléon .....        | .....             | .....                    | .....            | 1                    | .....           | 1                                  | 1               |
| 46  | St. Patrick and Wellington .....      | .....             | .....                    | .....            | 1                    | .....           | 1                                  | 1               |
| 47  | St. Thomas and Ottawa .....           | .....             | .....                    | .....            | 1                    | .....           | 1                                  | 1               |
| 48  | Victoria Square, south of Craig ..... | .....             | 1                        | 2                | .....                | .....           | .....                              | 6               |
| 49  | Victoria Square north of Craig .....  | 3                 | .....                    | .....            | .....                | .....           | .....                              | 4               |
| 50  | Viger Square, Basin No. 1 .....       | .....             | 1                        | .....            | .....                | .....           | .....                              | 1               |
| 51  | Viger Square, Basin No. 2 .....       | 3                 | .....                    | .....            | .....                | .....           | .....                              | 9               |
| 52  | Viger Square .....                    | .....             | .....                    | .....            | 1                    | .....           | .....                              | 2               |
| 53  | Viger Market .....                    | .....             | .....                    | .....            | .....                | 2               | 6                                  | 6               |
| 54  | Wellington and Centre .....           | 1                 | .....                    | .....            | .....                | .....           | .....                              | 1               |
| 55  | Wellington and Magdalen .....         | .....             | .....                    | .....            | 1                    | .....           | 1                                  | 1               |
| 56  | St. Patrick's Square .....            | 2                 | .....                    | .....            | .....                | .....           | .....                              | 2               |
| 57  | Dalhousie Square .....                | 2                 | .....                    | .....            | .....                | .....           | .....                              | 1               |

| No.                                | LOCATION   | Road Watering Nozles. | Cast Iron Fountains. | Wood Fountains. | Cast Iron Cattle drinking Troughs. | Number of Jets. |
|------------------------------------|--|-----------------------|----------------------|-----------------|------------------------------------|-----------------|
| Distributed through Mountain Park. |  |                       |                      |                 |                                    |                 |
| 1                                  | High Level Réservoir .....                           | .....                 | 1                    | .....           | .....                              | 1               |
| 2                                  | Foot of elevator .....                               | .....                 | 1                    | .....           | 1                                  | 1               |
| 3                                  | Alongside Molson's fence .....                       | .....                 | .....                | 1               | .....                              | 1               |
| 4                                  | Above Golf Club House .....                          | .....                 | .....                | 1               | .....                              | 1               |
| 5                                  | Park Road, north of elevator .....                   | 3                     | 10                   | .....           | .....                              | 3               |
| 6                                  | Park Road, running west side Hall property .....     | .....                 | .....                | 1               | .....                              | 1               |
| 7                                  | Park Avenue, opposite St. Jean-Baptiste street ..... | 1                     | .....                | .....           | 1                                  | 2               |



## No. 15.—SCHEDULE.—Continued.

| No | LOCATION<br>Distributed along the Wharves. | Road Watering<br>Nozles. | Cast Iron<br>Fountains. | Wood<br>Fountains. | Cattle<br>Water Troughs. | Urinals. | Number of Jets. |
|----|--|--------------------------|-------------------------|--------------------|--------------------------|----------|-----------------|
|    |  |                          |                         |                    |                          |          |                 |
| 1  | Wind-Mill Point .....                      | .....                    | 6                       | 1                  | 1                        | 1        | 3               |
| 2  | Allan's Wharf.....                         | .....                    | 1                       | .....              | .....                    | 1        | 2               |
| 3  | Allan's Sheds .....                        | .....                    | .....                   | .....              | 1                        | .....    | 2               |
| 4  | Custom House (opposite) .....              | .....                    | .....                   | .....              | .....                    | 1        | 2               |
| 5  | King's Basin .....                         | .....                    | 1                       | .....              | .....                    | .....    | 1               |
| 6  | Dominion Line .....                        | .....                    | .....                   | .....              | 1                        | 1        | 3               |
| 7  | Jacques Cartier Square (foot of) .....     | .....                    | 1                       | .....              | .....                    | .....    | 1               |
| 8  | St. Gabriel Street (foot of) .....         | 1                        | .....                   | .....              | .....                    | .....    | 1               |
| 9  | St. Helen's Island Ferry .....             | .....                    | .....                   | .....              | .....                    | .....    | 1               |
| 10 | Beaver Line .....                          | .....                    | .....                   | 1                  | 1                        | 1        | 3               |
| 11 | Donaldson Line, foot of Grant street ..... | .....                    | .....                   | .....              | .....                    | 1        | 1               |
| 12 | Commissioners, east of Barrack .....       | 1                        | .....                   | .....              | .....                    | .....    | 1               |
| 13 | Longueuil Ferry .....                      | .....                    | .....                   | .....              | .....                    | 1        | 2               |
| 14 | Marlborough street (foot of) .....         | .....                    | .....                   | .....              | .....                    | 1        | 2               |
| 15 | Desery Street (foot of) .....              | .....                    | .....                   | .....              | .....                    | 1        | 2               |
| 16 | Gale Street (west of) .....                | .....                    | .....                   | .....              | .....                    | 1        | 2               |

## ADMINISTRATION.

Table No. 16.—Detailed statement of expenditure for the year 1890.

| AQUEDUCT.                                  | \$   | cts | \$    | cts |
|--|------|-----|-------|-----|
| fences, gates and approaches.              | 242  | 67  |       |     |
| bridges and painting.....                  | 910  | 73  |       |     |
| ditches and repairing banks.               | 195  | 57  |       |     |
| seeds.....                                 | 93   | 60  |       |     |
| and cleaning, little " Rivière<br>e "..... | 150  | 00  |       |     |
| salary.....                                | 600  | 00  |       |     |
| " .....                                    | 385  | 63  |       |     |
| horse keep.....                            | 200  | 00  |       |     |
| vice.....                                  | 68   | 58  |       |     |
| service.....                               | 26   | 00  |       |     |
| dwellings.....                             | 306  | 97  | 3679  | 75  |
| <hr/>                                      |      |     |       |     |
| WHEEL HOUSE.                               |      |     |       |     |
| y, chief engineer, $\frac{1}{2}$ pay.....  | 850  | 00  |       |     |
| Ass't " .....                              | 900  | 00  |       |     |
| " " .....                                  | 900  | 00  |       |     |
| court, Oilers.....                         | 1000 | 00  |       |     |
| machinery.....                             | 51   | 22  |       |     |
| buildings.....                             | 453  | 89  |       |     |
| dwellings.....                             | 271  | 95  |       |     |
| ound buildings.....                        | 60   | 49  |       |     |
| Breast Wheel .....                         | 805  | 00  |       |     |
| leak under foundations.....                | 3663 | 47  |       |     |
| .....                                      | 53   | 21  |       |     |
| oil, tallow, &c.....                       | 816  | 47  | 9825  | 70  |
| <hr/>                                      |      |     |       |     |
| ENGINE HOUSE.                              |      |     |       |     |
| ler, st'm pipe for new b'ler &c.           | 361  | 60  |       |     |
| achinery and painting engine.              | 388  | 01  |       |     |
| engine and boiler houses....               | 427  | 73  |       |     |
| .....                                      | 6394 | 80  |       |     |
| ineer, $\frac{1}{2}$ pay.....              | 850  | 00  |       |     |
| " .....                                    | 1050 | 00  |       |     |
| , clerk.....                               | 657  | 33  |       |     |
| eam.....                                   | 7510 | 51  |       |     |
| and.....                                   | 50   | 00  |       |     |
| service.....                               | 25   | 00  |       |     |
| .....                                      | 326  | 81  |       |     |
| oil, tallow &c.....                        | 619  | 67  | 18661 | 46  |
| <hr/>                                      |      |     |       |     |
| Carried.....                               |      |     | 32166 | 91  |

|  | \$   | cts. | \$    | cts. |
|--|------|------|-------|------|
| Brought forward.....   |      |      | 32166 | 91   |
| MACHINE SHOP.  |      |      |       |      |
| Repairing chimney.....   | 30   | 00   |       |      |
| Sundries.....  | 27   | 22   | 57    | 22   |
|  |      |      |       |      |
| TAIL RACE.   |      |      |       |      |
| Repairs to fences.....   |      |      | 16    | 16   |
|  |      |      |       |      |
| PIPE TRACK.  |      |      |       |      |
| Repairing valves.....  | 6    | 25   |       |      |
| “ “ chambers.....  | 414  | 69   |       |      |
| Taking down and rebuilding wall on<br>Atwater Av. between Dorchester and<br>St. Antoine Streets..... | 5806 | 37   |       |      |
| Repairing and Painting “ Rivière St.<br>Pierre Bridge”.....  | 43   | 99   |       |      |
| Levelling Atwater Avenue.....  | 117  | 92   | 6389  | 22   |
|  |      |      |       |      |
| RESERVOIRS.  |      |      |       |      |
| Guardian's salary $\frac{4}{9}$ of his salary.....   | 400  | 00   |       |      |
| McTavish, repairing and cleaning .....   | 3176 | 80   |       |      |
| Shovelling snow.....   | 8    | 64   |       |      |
| Fuel and light.....  | 80   | 89   |       |      |
| Repairs to dwellings.....  | 18   | 79   |       |      |
| Painting.....  | 77   | 61   |       |      |
| High level, repairing overflow and drain<br>pipes .....  | 736  | 72   |       |      |
| High level, cleaning.....  | 68   | 80   |       |      |
| “ watching.....  | 297  | 03   | 4865  | 28   |
|  |      |      |       |      |
| METER DEPARTMENT.  |      |      |       |      |
| 2 Meter inspectors.....  | 1600 | 00   |       |      |
| Testing, placing and repairing meters..  | 2682 | 75   |       |      |
| New meters.....  | 6576 | 43   |       |      |
| Repairs to buildings.....  | 9    | 82   | 10869 | 00   |
|  |      |      |       |      |
| Carried.....   |      |      | 54363 | 79   |

|                                    | \$   | cts. | \$    | cts. |
|------------------------------------|------|------|-------|------|
| Brought forward.....               |      |      | 54363 | 79   |
| <b>ENGINE HOUSE HIGH LEVEL.</b>    |      |      |       |      |
| Engineer, $\frac{1}{2}$ pay.....   | 500  | 00   |       |      |
| One stoker and ass't engineer..... | 1365 | 52   |       |      |
| Fuel for engine.....               | 2265 | 80   |       |      |
| Oil, tallow, packing &c.....       | 323  | 39   |       |      |
| Repairs to buildings.....          | 5    | 65   |       |      |
| "    " machinery.....              | 354  | 58   |       |      |
| Ash pit.....                       | 345  | 07   |       |      |
| Telephone service..                | 44   | 50   |       |      |
| Light.....                         | 24   | 09   |       |      |
| Sundries.....                      | 115  | 10   | 5343  | 70   |

**WORK SHOP ON LAGAUCHETIÈRE ST.**

|  |      |    |       |    |
|--|------|----|-------|----|
| Wages: foreman, clerks, turncocks,<br>mechanics, laborers, carters, night<br>watchman..... | 7827 | 14 |       |    |
| Iron, spikes, nails, tin, lead &c.....   | 70   | 05 |       |    |
| Rent of foremans' house.   | 200  | 00 |       |    |
| Telephone service.....   | 102  | 32 |       |    |
| Fuel and light.....  | 745  | 93 |       |    |
| Repairs to buildings.....  | 384  | 70 |       |    |
| New water motor.....   | 195  | 80 |       |    |
| Shops in new wards.....  | 699  | 03 |       |    |
| Sundries.....  | 115  | 14 | 10340 | 11 |

**DISTRIBUTION PIPES.**

|  |       |    |       |    |
|--|-------|----|-------|----|
| Repairing mains, services, valves:<br>wages.....     | 15452 | 41 |       |    |
| Thawing pipes and carting water.....                 | 925   | 59 |       |    |
| Inspecting service pipes inside houses.              | 3107  | 50 |       |    |
| Dress for 5 inspectors.....                          | 255   | 25 |       |    |
| Repairing footpaths and service boxes:<br>wages..... | 1367  | 62 |       |    |
| Materials: iron, castings, lead, &c.....             | 547   | 19 |       |    |
| "    wood, planks, nails &c.....                     | 321   | 24 |       |    |
| "    rope, drain pipe &c.....                        | 141   | 29 |       |    |
| Two Well's Lights and 8 gasoline<br>furnaces.....    | 200   | 00 |       |    |
| An express waggon.....                               | 115   | 00 | 22433 | 09 |
| Carried.....   |       |    | 92480 | 69 |

|                      |    |     |          |
|----------------------|----|-----|----------|
|                      | \$ | cts | \$       |
| Brought forward..... |    |     | 92480 62 |

## PUBLIC FOUNTAINS.

|   |      |    |         |
|---|------|----|---------|
| Repairing: wages, including alterations to St-Louis Square Fountains..... | 1396 | 52 |         |
| Materials.....  | 32   | 48 |         |
| Painting.....   | 172  | 52 |         |
| New troughs and drinking fountains...                                     | 548  | 74 |         |
| Papineau Square Basin.....  | 262  | 88 | 2413 14 |

## HYDRANTS

|   |      |    |         |
|---|------|----|---------|
| Inspecting: wages.....                        | 6308 | 28 |         |
| Repairing " and materials.....                | 2641 | 10 |         |
| Thawing: horses and laborers.....             | 767  | 67 |         |
| Rent of tap house in St. Jean Bte. ward ..... | 56   | 00 |         |
| Coal for " .....                              | 60   | 00 |         |
| " " boilers.....                              | 56   | 02 | 9889 07 |

## MISCELLANEOUS.

|   |     |    |         |
|---|-----|----|---------|
| Contingencies for office: drawing papers, inks, colours, instruments, &c..... | 814 | 13 |         |
| Postage stamps, carters, sundries.....  | 270 | 00 |         |
| Telephone sup'ts' office .....  | 51  | 25 |         |
| Horsekeep sup't .....   | 400 | 00 |         |
| " foreman .....   | 350 | 00 |         |
| Damages.....  | 783 | 20 |         |
| School taxes and assessments ....   | 518 | 00 | 3187 18 |

## STAFF.

|                           |      |    |           |
|---------------------------|------|----|-----------|
| Superintendent.....       | 3500 | 00 |           |
| Ass't " .....             | 2000 | 00 |           |
| Accountant.....           | 1200 | 00 |           |
| Draughtsman. . . . .      | 1000 | 00 |           |
| Clerk and secretary... .. | 900  | 00 |           |
| " " chief inspector ..... | 900  | 00 | 9500 00   |
| Carried.....              |      |    | 117470 08 |

\$ cts \$ cts

Brought forward... 117470 08

# RENEWING TAIL RACE

BRIDGE ..... 3241 56

ANALYSING WATER..... 474 70 3716 26 121186 31

## LOANS.

### PIPE LAYING.

Wages ..... 146489 86

Tin and lead..... 15619 75

Lead pipes... .. 5741 10

Brass works, copper.... 7627 27

Timber.....,..... 4058 17

Bricks, sand, clay..... 3729 01

Drain pipes..... 299 11

Special castings (pat-

terns \$8-5.75)..... 47889 02

Cement..... 562 68

Iron and steel..... 2937 19

Tools..... 2777 56

Packing..... 434 37

Wrought iron pipes.... 946 29

Cast iron pipes..... 191508 33

Valve stones..... 17 50

Sundries..... 3563 33

Rock excavation in St.

J. Baptiste ward..... 1266 50

Coal..... 644 74

Carting pipes..... 5457 80

Testing and inspecting

pipes..... 2551 79

Culvert under Grd. Trk.

Ry. Track..... 3957 82 448079 19

### SPECIAL.

New boiler for High

Level engine.....

62 00 448141 19 \$569327 53

SCHEDULE No 17.—Inventory of stock on hand, January 1891.

| SIZE.                         | 30" | 24" | 20"  | 16"  | 12"  | 10" | 8"   | 6"  | 4"  | 4½" | 2"  | 1"  |
|-------------------------------|-----|-----|------|------|------|-----|------|-----|-----|-----|-----|-----|
| Cast iron pipes<br>(new)..... | 492 | 898 | 3240 | 1332 | 4224 | 900 | 9424 | 972 | 549 | 396 | 396 | 458 |

| DESCRIPTION.                | 30" | 24" | 20" | 16" | 12" | 10" | 8" | 6"  | 4"  |
|-----------------------------|-----|-----|-----|-----|-----|-----|----|-----|-----|
| Cast iron pipes (old).....  |     |     |     |     |     |     |    |     |     |
| Stop-valves .....           | 2   | 2   |     |     | 9   |     | 5  | 1   |     |
| Slip sockets .....          | 11  | 40  | 10  | 32  | ■   | 23  | 52 | 48  | 7   |
| Cast iron caps .....        |     |     |     | 3   | 19  | 14  | 48 | 8   |     |
| Cast iron plugs .....       |     |     |     | 3   | 34  | 30  | 12 | 150 | 106 |
| Cast iron double bends.. .. |     |     |     |     |     | 6   | 5  | 17  | 2   |
| Cast iron elbows.....       |     |     |     |     | 17  | 33  | 4  | 14  | 2   |
| Cast iron sweeps.....       | 1   | 10  | 1   | 7   | 8   | 4   | 4  | 6   |     |

CROSSES

| 30x20 | 30x12 | 30x6 | 30x4 | 24x24 | 24x16 | 24x12 | 24x8 | 20x6 | 16x12 | 16x6 | 12x12 | 12x8 |
|-------|-------|------|------|-------|-------|-------|------|------|-------|------|-------|------|
| 1     | 6     | 1    | 1    | 4     | 2     | ■     | 3    | 2    | 1     | 1    | 13    | 1    |

CROSSES

| 12x6 | 10x8 | 10x6 | 10x4 | 8x8 | 8x6 | 8x4 | 6x6 | 6x4 | 4x4 | 4x3 |
|------|------|------|------|-----|-----|-----|-----|-----|-----|-----|
| 2    | 5    | 2    | 4    | 6   | 6   | 2   | 12  | 1   | 6   | 4   |

TEES.

| 30x12 | 30x6 | 30x4 | 24x12 | 24x8 | 24x6 | 24x4 | 20x4 | 12x12 | 12x8 | 12x6 | 12x4 | 10x10 |
|-------|------|------|-------|------|------|------|------|-------|------|------|------|-------|
| 1     | 1    | 1    | 2     | 8    | 5    | 8    | 1    | 1     | 1    | 2    | 1    | 1     |

TEES

| 10x8 | 10x6 | 10x4 | 8x8 | 8x6 | 6x6 | 6x4 | 4x4 |
|------|------|------|-----|-----|-----|-----|-----|
| 3    | 3    | 2    | 1   | 2   | 7   | 4   | 2   |

TAPERS.

| 30x24 | 24x16 | 20x16 | 16x12 | 12x10 | 12x8 | 12x6 | 10x8 | 10x6 | 8x6 | 8x4 | 6x4 | 4x3 |
|-------|-------|-------|-------|-------|------|------|------|------|-----|-----|-----|-----|
| 6     | 1     | 1     | 1     | 5     | 38   | 12   | 13   | 4    | 12  | 40  | 5   | 41  |

BRECHES PIPES

| 30x30 | 30x24 | 24x24 | 12x12 | 12x10 | 10x10 | 10x6 |
|-------|-------|-------|-------|-------|-------|------|
| 3     | 1     | 1     | 3     | 2     | 4     | 3    |

SCHEDULE No. 17.—*Continued.*

|                                     |     |                                   |        |
|-------------------------------------|-----|-----------------------------------|--------|
| New hydrants (5 noz.).....          | 12  | Hydrants already used.....        | 117    |
| Cast iron fender posts.....         | 51  | Street water. nozzle (brass). 555 |        |
| Hydrant covers assorted....         | 124 | “ “ “ (iron)... 102               |        |
| Pieces for lengthening hydrant..... | 46  | Hydrant nozles.....               | 10     |
| Assorted valve covers.....          | 71  | Assorted spindles.....            | 71     |
|                                     |     | Rods for stop-cocks assorted      | 40     |
| <hr/>                               |     | <hr/>                             |        |
| 1½" cocks for iron pipe.....        | 14  | Assorted covers for boxes...      | 638    |
| 1" pneumatic valves... ..           | 2   | Brass y's ⅝".....                 | 81     |
| ⅝" “ “.....                         | 27  | 2" iron pipe (in feet).....       | 50     |
| ½" “ “.....                         | 150 | 1½" “ “.....                      | 447    |
| 2 way pneumatic valves....          | 28  | 1" “ “.....                       | 300    |
| 3 “ “ “.....                        | 40  | 1" lead pipe (in lbs.) 67         |        |
| 4 “ “ “.....                        | 10  | rolls.....                        | 11,862 |
| 1" coupling cocks.....              | 10  | ⅝" lead pipe 24 rolls.....        | 3,600  |
| ⅝" “ “.....                         | 2   | ½" “ 221 “.....                   | 53,550 |
| ½" “ “.....                         | 6   | Lead (pig in lbs.).....           | 2,768  |
| ⅝" crosses.....                     | 9   | Block tin (in lbs.).....          | 396    |
| 1" x ⅝ T's.....                     | 122 | ⅜ copper tubing (in lbs.)...1,714 |        |
| 1" nozles.....                      | 1   | Valve stones (large).....         | 4      |
| ⅝" “.....                           | 114 | “ “ (small).....                  | 10     |
| ½" “.....                           | 18  | 4" iron boxes.....                | 1      |



| DESCRIPTION.         | 30" | 24" | 20" | 18" | 16" | 12" | 10" | 8" | 6" | 4" |   |
|----------------------|-----|-----|-----|-----|-----|-----|-----|----|----|----|---|
| Stop valves .....    | 1   | 1   |     | 1   | 1   | 2   | 2   | 2  | 2  | 2  |   |
| Double bends .....   |     |     |     |     |     |     |     | 2  | 1  | 1  |   |
| Single " .....       |     |     |     |     | 1   | 2   | 2   | 1  | 1  | 1  |   |
| Plugs .....          |     |     |     |     |     | 1   | 1   | 1  | 1  | 1  |   |
| Bonnets .....        |     |     |     |     |     | 1   | 1   | 1  | 1  | 1  |   |
| Sockets .....        | 1   | 1   | 1   | 1   | 1   | 3   | 3   | 2  | 2  | 1  | 1 |
| Sweeps .....         |     |     |     |     |     |     |     | 1  |    |    |   |
| Radial sockets ..... |     |     |     |     |     | 1   |     | 1  |    |    |   |

CROSSES.

| 12x12 | 20x12 | 20x8 | 12x12 | 12x10 | 12x8 | 12x6 | 12x4 | 10x10 | 10x8 | 10x6 | 10x4 | 8x8 |
|-------|-------|------|-------|-------|------|------|------|-------|------|------|------|-----|
| 1     | 1     | 1    | 2     | 1     | 2    | 1    | 1    | 1     | 1    | 1    | 1    | 2   |

CROSSES.

|  | 8x6 | 6x6 | 6x4 | 8x4 | 4x3 | 3x3 | 4x4 |
|--|-----|-----|-----|-----|-----|-----|-----|
|  | 1   | 2   | 1   | 1   | 1   | 1   | 1   |

TREN.

BREECHES PIPES.

| 16x12 | 12x10 | 12x8 | 12x6 | 10x8 | 8x8 | 8x6 | 30x30 | 12x12 | 12x6 | 10x10 | 6x6 |
|-------|-------|------|------|------|-----|-----|-------|-------|------|-------|-----|
| 1     | 2     | 1    | 1    | 1    | 1   | 1   | 1     | 1     | 1    | 1     | 1   |

TAPERS.

| 24x16 | 20x16 | 16x12 | 12x10 | 12x8 | 12x6 | 10x8 | 10x6 | 8x6 | 8x4 | 6x4 | 4x3 |
|-------|-------|-------|-------|------|------|------|------|-----|-----|-----|-----|
| 1     | 1     | 1     | 1     | 3    | 1    | 1    | 1    | 1   | 1   | 1   | 1   |

HYDRANTS.

|  | 3 noz. | 5 noz. |
|--|--------|--------|
|  | 2      | 2      |

- 2 Footpath service box plates.
- 1 Square, valve core pattern.
- 2 1" Service pattern and core boxes.
- 1 4" Hydrant seal and core box.
- 1 3" " " " "
- 1 Grate for small furnace.
- 2 Service boxes and core boxes.
- 3 Hammer patterns.
- 1 Casing, for old hydrant.
- 2 Service boxes and core boxes.
- 1 24" Double Socket with bolts
- 2 Valve frames and covers complete
- 1 Large furnace grate

- 1 12" Blind flange.
- 1 20" " " "
- 1 30" pipe 3 ft. long for connecting valve
- 1 4" pipe 2 ft. long and core box.
- 1 8" pipe 2 ft. long socket & core box.
- 3 pieces pipe with flanger for lengthening hydrants
- 1 Large lead pot pattern.
- 1 Small " " "
- 1 Plumber's lead pot pattern.
- 3 Taper patterns

1 1/2 x 4 2 x 4 2 1/2 x 4



## MONTREAL WATER WORKS.

No. 18.—Schedule—Approximative cost of laying Main Pipes in the City in 1890.

| NAME OF STREETS.       | 24"   | 20"   | 16"   | 12"   | 10"   | 8"    | 6"    | 4"    | Total. | Valves. | Hydrants. | Wages.   | Materials. | Total.    |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|---------|-----------|----------|------------|-----------|
| <i>East Ward.</i>      |       |       |       |       |       |       |       |       |        |         |           |          |            |           |
| St. Thérèse .....      | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .....  | .....   | 1         | \$ 35 92 | \$ 74 78   | \$ 110 70 |
| <i>West Ward.</i>      |       |       |       |       |       |       |       |       |        |         |           |          |            |           |
| St. Helen .....        | ..... | ..... | ..... | ..... | 344   | ..... | ..... | ..... | 344    | 1       | .....     | 404 18   | 582 68     | 986 86    |
| McGill .....           | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .....  | .....   | 1         | 28 20    | 49 42      | 77 82     |
| Commissioners .....    | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .....  | .....   | 1         | 26 48    | 58 14      | 79 62     |
| St. Peter .....        | ..... | ..... | ..... | ..... | 773   | 293   | ..... | ..... | 1066   | 14      | 2         | 1982 70  | 2486 79    | 4469 49   |
| Fortification .....    | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .....  | 1       | 1         | 77 53    | 163 70     | 241 23    |
| <i>St. Ann's Ward.</i> |       |       |       |       |       |       |       |       |        |         |           |          |            |           |
| .....                  | ..... | ..... | ..... | ..... | 1117  | 293   | ..... | ..... | 1410   | 18      | 6         | 2519 09  | 3335 73    | 5854 82   |
| Chatham .....          | ..... | ..... | ..... | ..... | ..... | 156   | ..... | ..... | 151    | 1       | 1         | 194 65   | 297 48     | 492 14    |
| Canning .....          | ..... | ..... | ..... | 350   | ..... | ..... | ..... | ..... | 350    | 1       | 1         | 459 86   | 877 60     | 1337 46   |
| Basin .....            | ..... | ..... | ..... | ..... | ..... | 330   | ..... | ..... | 330    | 2       | 2         | 78 71    | 596 89     | 675 60    |
| McCord .....           | ..... | ..... | ..... | 1933  | ..... | ..... | ..... | ..... | 1933   | 8       | 4         | 5600 54  | 5145 19    | 10745 73  |
| Centre .....           | 2139  | 279   | 192   | ..... | ..... | ..... | ..... | ..... | 2610   | 4       | 2         | 5952 49  | 13560 91   | 19513 40  |
| Montmorenci .....      | 2068  | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2068   | 6       | 1         | 9238 32  | 13834 02   | 23132 34  |
| St. Patrick .....      | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .....  | 4       | 3         | 177 92   | 568 14     | 746 06    |
| Conde .....            | ..... | ..... | ..... | 300   | ..... | ..... | ..... | ..... | 300    | 1       | .....     | 276 31   | 707 60     | 1074 30   |





July 4, 1959

[illegible]



MONTREAL WATER WORKS.

No. 18.—Schedule.—Approximative cost of laying Main Pipes in the City in 1890.—Continued.

| NAME OF STREETS.                    | 24"   | 20"   | 16"   | 12"   | 10"   | 8"    | 6"    | 4"    | Total. | Valves. | Hydrants. | Wages. |       | Materials. |      | Total. |      |
|-------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|---------|-----------|--------|-------|------------|------|--------|------|
|                                     |       |       |       |       |       |       |       |       |        |         |           | \$     | Cts.  | \$         | Cts. | \$     | Cts. |
| <i>St. Gabriel Ward.—Continued.</i> |       |       |       |       |       |       |       |       |        |         |           |        |       |            |      |        |      |
| Brought forward.....                | ..... | ..... | ..... | ..... | ..... | 101   | ..... | 99    | 200    | 1       | .....     | 171    | 53    | 190        | 82   | 352    | 35   |
| Atwater (Drain pipe) *.....         | ..... | ..... | ..... | ..... | ..... | ..... | 108   | ..... | 108    | 1       | .....     | 551    | 13    | 109        | 06   | 660    | 19   |
| Favard.....                         | ..... | ..... | ..... | ..... | ..... | 232   | ..... | ..... | 232    | .....   | .....     | 252    | 99    | 274        | 10   | 527    | 09   |
| Charron.....                        | ..... | ..... | ..... | ..... | ..... | 308   | ..... | ..... | 308    | .....   | .....     | 232    | 68    | 364        | 66   | 594    | 34   |
| Napoléon Road.....                  | ..... | ..... | ..... | ..... | ..... | 12    | ..... | ..... | 12     | 1       | 1         | 60     | 36    | 147        | 38   | 207    | 74   |
| Centre.....                         | 2178  | ..... | ..... | 198   | ..... | ..... | ..... | ..... | 2376   | 11      | 3         | 9521   | 14    | 14535      | 73   | 24056  | 87   |
| St. Patrick.....                    | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | .....  | .....   | 1         | .....  | ..... | 77         | 50   | 77     | 50   |
| Albert.....                         | ..... | ..... | ..... | ..... | ..... | 369   | ..... | ..... | 369    | .....   | .....     | 222    | 70    | 418        | 70   | 641    | 40   |
|                                     | 2178  | ..... | ..... | 198   | ..... | 1022  | 108   | 99    | 3605   | 14      | 5         | 11012  | 53    | 16114      | 95   | 27127  | 48   |

\* Drain pipe.



No. 18.—Schedule.— Approximate cost of laying Main Pipes in the City in 1890.—Continued.

| WARDS.                 | 24"   | 20"   | 16"   | 12"   | 10"   | 8"    | 6"    | 4"    | Total | Valves. | Hydrants. | Wages. |      | Materials. |      | Total. |      |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|-----------|--------|------|------------|------|--------|------|
|                        |       |       |       |       |       |       |       |       |       |         |           | \$     | Cts. | \$         | Cts. | \$     | Cts. |
| East.....              | ..... | ..... | ..... | ..... | 1117  | 203   | ..... | ..... | ..... | .....   | .....     | 35     | 92   | 74         | 76   | 110    | 70   |
| West.....              | ..... | ..... | ..... | ..... | ..... | 1616  | ..... | ..... | 1410  | 16      | 16        | 2519   | 09   | 3335       | 71   | 5854   | 82   |
| St. Ann.....           | 4207  | 279   | 192   | 6612  | ..... | 3749  | 1513  | 459   | 12906 | 41      | 30        | 31208  | 42   | 47404      | 46   | 78610  | 88   |
| St. Antoine.....       | 2188  | 812   | ..... | 12239 | 293   | 126   | 432   | 135   | 22285 | 88      | 51        | 26720  | 21   | 61066      | 46   | 87786  | 67   |
| St. Lawrence.....      | ..... | ..... | ..... | 5500  | 230   | ..... | 72    | 234   | 8723  | 27      | 21        | 5896   | 14   | 19892      | 29   | 25788  | 43   |
| St. Louis.....         | ..... | ..... | ..... | 6686  | 294   | ..... | ..... | ..... | 7286  | 37      | 22        | 8774   | 83   | 19186      | 98   | 27961  | 81   |
| St. James.....         | ..... | 4350  | 96    | 3683  | 338   | 2287  | ..... | ..... | 10754 | 43      | 26        | 12635  | 66   | 36768      | 98   | 49404  | 64   |
| St. Mary.....          | 1024  | ..... | ..... | 3264  | 181   | 707   | 1137  | ..... | 7943  | 36      | 14        | 9176   | 05   | 22226      | 90   | 31402  | 95   |
| St. Jean-Baptiste..... | ..... | ..... | ..... | 840   | ..... | 3119  | 1990  | ..... | 5949  | 81      | 16        | 2669   | 19   | 6909       | 21   | 9578   | 40   |
| Hoche, agt.....        | ..... | ..... | ..... | 836   | 176   | 762   | 472   | 144   | 2390  | 61      | 6         | 1067   | 07   | 4158       | 70   | 5225   | 77   |
| St. Gabriel.....       | 2178  | ..... | ..... | 198   | ..... | 102   | 108   | 99    | 3605  | 14      | 5         | 11012  | 53   | 16114      | 95   | 27127  | 48   |
|                        | 9597  | 5441  | 288   | 39858 | 7561  | 13681 | 5754  | 1071  | 83251 | 316     | 198       | 111713 | 11   | 237139     | 44   | 348852 | 55   |

## MONTREAL WATER WORKS.

No. 19.—Schedule.—Cost of laying Service Pipes in 1890.

| NAME OF STREETS.     | No.<br>OF SER-<br>VICES. | WAGES.  | MATERIALS. | TOTAL.  |
|----------------------|--------------------------|---------|------------|---------|
| EAST WARD.           |                          |         |            |         |
|                      |                          | \$ Cts. | \$ Cts.    | \$ Cts. |
| Champ-de-Mars.....   | 1                        | 25 91   | 3 87       | 29 78   |
| Commissioners.....   | 1                        | 6 82    | 4 76       | 11 58   |
| Barrack.....         | 3                        | 16 12   | 7 71       | 23 83   |
| St-Louis.....        | 1                        | 31 31   | 14 34      | 45 65   |
| St-Vincent.....      | 1                        | 10 30   | 8 91       | 19 21   |
| St-Paul.....         | 6                        | 17 10   | 12 18      | 29 28   |
|                      |                          | 107 56  | 51 77      | 159 33  |
| CENTRE WARD.         |                          |         |            |         |
| Fortification.....   | 10                       | 51 65   | 26 05      | 77 70   |
| Le Royer.....        | 1                        | 4 18    | 11 11      | 15 29   |
| Craig.....           | 10                       | 24 90   | 23 83      | 52 73   |
| Common.....          | 1                        | 5 63    | 5 02       | 10 65   |
| St-James.....        | 1                        | 78      | 7 92       | 8 70    |
|                      | 23                       | 87 14   | 77 93      | 165 07  |
| WEST WARD.           |                          |         |            |         |
| St-Helen.....        | 1                        | 6 37    | 4 52       | 10 89   |
| Notre-Dame.....      | 1                        | 50 58   | 9 34       | 59 92   |
|                      | 2                        | 56 95   | 13 86      | 70 81   |
| ST-ANN'S WARD.       |                          |         |            |         |
| St-Francis.....      | 4                        | 45 24   | 12 40      | 57 64   |
| Smith.....           | 1                        | 18 86   | 5 57       | 24 43   |
| St-Etienne.....      | 1                        | 10 97   | 6 82       | 17 79   |
| Canning.....         | 2                        | 12 13   | 5 82       | 17 95   |
| St-Martin.....       | 1                        | 9 73    | 3 78       | 13 51   |
| McCord.....          | 1                        | 20 03   | 3 60       | 23 63   |
| Center.....          | 2                        | 40 19   | 1 06       | 51 25   |
| Murray.....          | 6                        | 67 04   | 25 22      | 92 26   |
| St-Patrick.....      | 1                        | 78      | 5 29       | 6 07    |
| Shearer.....         | 2                        | 28 27   | 7 86       | 36 13   |
| Manufacturers.....   | 5                        | 3 90    | 12 15      | 16 05   |
| Dalhousie.....       | 1                        | 21 69   | 12 98      | 34 67   |
| Condé.....           | 1                        | 14 47   | 4 95       | 19 42   |
| College.....         | 2                        | 17 91   | 18 71      | 36 62   |
| St-Maurice.....      | 4                        | 24 31   | 12 98      | 37 29   |
| Carried forward..... | 34                       | 335 52  | 149 19     | 484 71  |

## chedule.—COST OF LAYING SERVICE PIPES.—Continued.

| F STREETS.       | No.<br>OF SER-<br>VICES. | WAGES.  | MATERIALS. | TOTAL.  |
|------------------|--------------------------|---------|------------|---------|
|                  |                          | \$ Cts. | \$ Cts.    | \$ C    |
| AND.—Continued.  |                          |         |            |         |
| Brought forward. | 34                       | 335 52  | 149 19     | 484 71  |
| .....            | 3                        | 14 80   | 6 49       | 21      |
| .....            | 1                        | 14 44   | 5 58       | 20      |
| .....            | 1                        | 13 35   | 8 19       | 21      |
| .....            | 4                        | 43 66   | 16 39      | 60      |
| .....            | 4                        | 31 80   | 20 79      | 52 59   |
| .....            | 4                        | 34 59   | 12 55      | 47 14   |
| .....            | 1                        | 14 06   | 5 85       | 19 91   |
| .....            | 12                       | 88 17   | 63 63      | 151 80  |
| .....            | 2                        | 14 41   | 9 29       | 23 70   |
| .....            | 1                        | 13 77   | 7 09       | 20 86   |
| .....            | 1                        | 24 68   | 6 10       | 30 78   |
| .....            | 6                        | 28 66   | 27 98      | 56 64   |
| .....            | 23                       | 139 73  | 79 49      | 219 22  |
| .....            | 28                       | 106 19  | 79 64      | 185 83  |
| .....            | 1                        | 19 26   | 10 03      | 29 29   |
|                  | 126                      | 937 09  | 508 28     | 1445 37 |
| ONE WARD         |                          |         |            |         |
| .....            | 6                        | 32 69   | 19 54      | 52 23   |
| .....            | 5                        | 18 14   | 13 01      | 31 15   |
| .....            | 1                        | 2 53    | 7 60       | 10 13   |
| venue.....       | 21                       | 74 26   | 60 57      | 134 83  |
| .....            | 1                        | 10 50   | 7 38       | 17 88   |
| .....            | 24                       | 103 40  | 136 69     | 240 09  |
| .....            | 5                        | 26 18   | 15 35      | 41 53   |
| .....            | 1                        | 11 13   | 3 60       | 14 73   |
| .....            | 3                        | 16 53   | 8 52       | 25 05   |
| .....            | 1                        | 15 97   | 5 30       | 21 27   |
| .....            | 4                        | 43 07   | 16 81      | 59 88   |
| .....            | 6                        | 14 71   | 8 52       | 23 23   |
| .....            | 1                        | 8 38    | 3 42       | 11 80   |
| .....            | 1                        | 16 82   | 6 12       | 22 94   |
| ue.....          | 7                        | 91 44   | 18 36      | 109 80  |
| .....            | 3                        | 43 70   | 18 17      | 61 87   |
| .....            | 1                        | 11 73   | 8 54       | 20 27   |
| mt.....          | 2                        | 57 44   | 10 16      | 67 60   |
| .....            | 2                        | 25 36   | 12 82      | 38 18   |
| n.....           | 3                        | 18 14   | 7 41       | 25 55   |
| ue.....          | 12                       | 51 52   | 26 07      | 77 59   |
| .....            | 5                        | 50 93   | 32 60      | 83 73   |
| .....            | 6                        | 79 32   | 36 20      | 115 52  |
| .....            | 1                        | 4 53    | 8 14       | 12 67   |
| ied.....         | 122                      | 828 42  | 491 10     | 1319 52 |

No. 19.—Schedule.—COST OF LAYING SERVICE PIPES.—*Continued*.

| NAME OF STREETS.                 | No.<br>OF SER-<br>VICES. | WAGES.  | MATERIALS. | TOTAL.  |
|----------------------------------|--------------------------|---------|------------|---------|
|                                  |                          | \$ Cts. | \$ Cts.    | \$ Cts. |
| ST-ANTOINE WARD.— <i>Cont'd.</i> |                          |         |            |         |
| Brought forward.....             | 122                      | 828 42  | 491 10     | 1319 52 |
| MacKay .. .. .                   | 1                        | 8 78    | 2 97       | 11 75   |
| Latour .. .. .                   | 1                        | 12 88   | 6 84       | 19 32   |
| Essex Avenue .. .. .             | 4                        | 11 39   | 9 76       | 21 15   |
| Aylmer..... .. .                 | 2                        | 20 62   | 8 49       | 29 11   |
| Richmond .. .. .                 | 3                        | 55 26   | 10 20      | 65 46   |
| St. Antoine .. .. .              | 9                        | 55 44   | 32 67      | 88 11   |
| Aqueduct..... .. .               | 4                        | 42 35   | 29 71      | 72 06   |
| Glosse..... .. .                 | 12                       | 56 12   | 43 68      | 99 80   |
| Richmond Square.....             | 1                        | 10 78   | 4 68       | 15 46   |
| Notre-Dame .. .. .               | 2                        | 26 35   | 9 65       | 36 46   |
| Durocher..... .. .               | 2                        | 17 99   | 8 54       | 26 53   |
| Dorchester..... .. .             | 13                       | 221 53  | 54 91      | 276 44  |
| Guy..... .. .                    | 4                        | 79 43   | 23 84      | 103 27  |
| Versailles..... .. .             | 11                       | 51 74   | 38 01      | 89 75   |
| Argyle Avenue..... ..            | 2                        | 28 57   | 9 35       | 37 92   |
| University..... .. .             | 2                        | 9 46    | 4 08       | 13 54   |
| McGill College Avenue.....       | 1                        | 9 87    | 11 74      | 21 61   |
| Stanley..... .. .                | 9                        | 217 90  | 61 15      | 279 05  |
| McGregor..... .. .               | 1                        | 19 77   | 4 90       | 24 67   |
| Canning..... .. .                | 1                        | 4 83    | 12 98      | 17 81   |
| St-Mark... .. .                  | 1                        | 10 49   | 6 12       | 16 61   |
| Cathcart .. .. .                 | 1                        | 4 46    | 5 29       | 9 75    |
| Mountain..... .. .               | 7                        | 52 27   | 40 96      | 93 23   |
| St-James..... .. .               | 15                       | 87 05   | 185 38     | 272 43  |
| Mansfield .. .. .                | 11                       | 76 99   | 55 54      | 132 53  |
| Peel .. .. .                     | 5                        | 63 47   | 40 13      | 103 60  |
| Drummond .. .. .                 | 3                        | 46 54   | 29 09      | 75 63   |
| Chatham..... .. .                | 5                        | 29 83   | 14 08      | 43 91   |
| Windsor..... .. .                | 5                        | 54 25   | 32 05      | 86 30   |
| Ste. Catherine. ....             | 4                        | 47 48   | 17 00      | 64 48   |
| Quesnel .. .. .                  | 4                        | 18 98   | 13 99      | 32 97   |
| Seigneurs..... .. .              | 6                        | 31 66   | 13 86      | 45 52   |
|                                  | 274                      | 2312 95 | 1332 54    | 3645 49 |

## Schedule.—COST OF LAYING SERVICE PIPES.—Continued.

| STREETS.   | No.<br>OF SER-<br>VICES. | WAGES.  | MATERIALS. | TOTAL.  |
|------------|--------------------------|---------|------------|---------|
| NCE WARD.  |                          | \$ Cts. | \$ Cts.    | \$ Cts. |
| .....      | 1                        | 4 68    | 4 32       | 9 00    |
| .....      | 15                       | 24 61   | 33 15      | 57 76   |
| .....      | 6                        | 49 62   | 16 69      | 66 31   |
| .....      | 8                        | 86 74   | 33 08      | 119 82  |
| .....      | 61                       | 310 33  | 254 82     | 565 15  |
| .....      | 2                        | 23 70   | 4 80       | 28 50   |
| .....      | 10                       | 48 77   | 46 12      | 94 89   |
| .....      | 12                       | 103 38  | 42 27      | 145 65  |
| .....      | 21                       | 159 73  | 74 27      | 233 73  |
| .....      | 15                       | 186 35  | 79 41      | 265 76  |
| .....      | 1                        | 14 48   | 6 12       | 20 60   |
| .....      | 8                        | 43 52   | 26 15      | 69 67   |
| .....      | 4                        | 20 22   | 17 32      | 37 54   |
| .....      | 1                        | 11 85   | 4 78       | 16 63   |
| .....      | 10                       | 79 39   | 38 19      | 117 58  |
| .....      | 7                        | 51 75   | 21 50      | 73 25   |
| .....      | 1                        | 11 99   | 6 52       | 18 51   |
| .....      | 10                       | 61 72   | 48 05      | 109 77  |
| .....      | 1                        | 15 05   | 10 17      | 25 22   |
| .....      | 1                        | 20 03   | 5 26       | 25 29   |
| .....      | 2                        | 8 26    | 6 74       | 15 00   |
| .....      | 3                        | 9 39    | 7 71       | 17 10   |
| .....      | 1                        | 26 25   | 3 69       | 29 94   |
| .....      | 4                        | 19 13   | 10 51      | 29 64   |
| .....      | 3                        | 49 17   | 15 29      | 64 46   |
| .....      | 6                        | 37 57   | 22 11      | 59 68   |
| .....      | 1                        | 9 91    | 8 71       | 18 62   |
| romée..... | 21                       | 101 68  | 75 95      | 177 63  |
| .....      | 90                       | 464 12  | 323 98     | 788 10  |
| .....      | 2                        | 27 92   | 7 28       | 35 20   |
|            | 328                      | 2081 31 | 1254 69    | 3336 00 |

## LAYING NEW PIPE - (Continued)

| NO.   | WEIGHT | MATERIALS | TOTAL   |
|-------|--------|-----------|---------|
|       | \$ Cts | \$ Cts    | \$ Cts  |
| 1     | 41 11  | 24 12     | 65 23   |
| 2     | 2 22   | 3 60      | 6 82    |
| 3     | 1 46   | 4 12      | 12 12   |
| 4     | 14 25  | 9 23      | 23 48   |
| 5     | 1 22   | 25 15     | 110 46  |
| 6     | 1 22   | 2 61      | 2 92    |
| 7     | 1 13   | 3 61      | 14 74   |
| 8     | 28 23  | 24 81     | 29 07   |
| 9     | 28 24  | 14 90     | 38 64   |
| 10    | 61 17  | 27 19     | 27 06   |
| 11    | 1 46   | 3 84      | 14 90   |
| 12    | 26 17  | 40 34     | 116 93  |
| 13    | 11 18  | 14 29     | 26 97   |
| 14    | 11 12  | 11 62     | 39 48   |
| 15    | 28 07  | 20 27     | 88 64   |
| 16    | 1 13   | 5 29      | 15 27   |
| 17    | 101 02 | 101 17    | 206 38  |
| 18    | 120 07 | 26 63     | 816 70  |
| 19    | 40 17  | 34 29     | 114 16  |
| 20    | 28 57  | 29 16     | 115 75  |
| 21    | 63 12  | 20 31     | 95 63   |
| 22    | 32 25  | 18 23     | 70 50   |
| TOTAL | 247 34 | 266 57    | 2154 11 |

|       |         |        |         |
|-------|---------|--------|---------|
| 23    | 28 06   | 43 23  | 105 29  |
| 24    | 1 6     | 43 31  | 116 47  |
| 25    | 21 44   | 15 65  | 37 09   |
| 26    | 9 24    | 14 74  | 23 98   |
| 27    | 48 17   | 34 70  | 204 67  |
| 28    | 24 70   | 24 28  | 48 98   |
| 29    | 49 51   | 34 25  | 83 76   |
| 30    | 41 63   | 22 09  | 63 72   |
| 31    | 4 56    | 5 88   | 10 44   |
| 32    | 115 19  | 91 21  | 246 80  |
| 33    | 315 40  | 113 56 | 428 96  |
| 34    | 72 39   | 24 73  | 97 32   |
| 35    | 14 36   | 44 45  | 108 81  |
| 36    | 21 45   | 16 73  | 38 18   |
| 37    | 70 64   | 47 38  | 118 02  |
| 38    | 32 27   | 29 05  | 61 32   |
| 39    | 35 20   | 34 78  | 69 98   |
| 40    | 49 99   | 26 01  | 76 00   |
| 41    | 101 02  | 42 18  | 143 50  |
| TOTAL | 1353 08 | 730 21 | 2083 29 |

dule.—COST OF LAYING SERVICE PIPES.—*Continued.*

| TRENCHES          | No<br>OF SER-<br>VICES. | WAGES.  | MATERIALS. | TOTAL.  |
|-------------------|-------------------------|---------|------------|---------|
|                   |                         | \$ Cts. | \$ Cts.    | \$ Cts. |
| <i>—Continued</i> |                         |         |            |         |
| forward.....      | 187                     | 1353 08 | 730 21     | 2083 29 |
| .....             | 11                      | 48 78   | 38 39      | 87 17   |
| .....             | 21                      | 93 11   | 59 41      | 152 52  |
| .....             | 41                      | 245 71  | 127 52     | 373 23  |
| .....             | 5                       | 75 52   | 21 94      | 97 46   |
| .....             | 13                      | 46 75   | 34 81      | 81 56   |
| .....             | 15                      | 107 73  | 49 47      | 157 20  |
|                   | 293                     | 1970 68 | 1061 75    | 3032 43 |
| WARD              |                         |         |            |         |
| .....             | 8                       | 30 07   | 28 95      | 59 02   |
| .....             | 10                      | 7 80    | 28 18      | 35 98   |
| .....             | 2                       | 9 73    | 5 48       | 15 21   |
| .....             | 2                       | 10 15   | 9 21       | 19 36   |
| .....             | 4                       | 29 49   | 9 45       | 38 94   |
| .....             | 2                       | 14 92   | 6 50       | 21 42   |
| .....             | 5                       | 15 07   | 12 29      | 27 36   |
| .....             | 12                      | 26 91   | 28 71      | 55 62   |
| .....             | 8                       | 20 62   | 22 34      | 42 96   |
| .....             | 10                      | 113 99  | 47 19      | 161 18  |
| .....             | 7                       | 40 61   | 16 84      | 57 45   |
| .....             | 11                      | 78 34   | 41 19      | 119 53  |
| .....             | 16                      | 33 85   | 35 68      | 69 23   |
| .....             | 38                      | 135 60  | 117 05     | 242 65  |
| .....             | 44                      | 158 12  | 167 28     | 325 38  |
| .....             | 6                       | 25 41   | 17 58      | 42 99   |
| .....             | 3                       | 18 72   | 7 30       | 26 02   |
| .....             | 6                       | 33 88   | 26 31      | 60 19   |
| .....             | 24                      | 69 74   | 63 54      | 133 28  |
| .....             | 48                      | 237 68  | 179 34     | 417 02  |
| .....             | 14                      | 51 48   | 55 08      | 106 55  |
| .....             | 14                      | 87 22   | 47 24      | 134 46  |
| .....             | 6                       | 52 66   | 31 03      | 83 69   |
| .....             | 5                       | 20 03   | 20 45      | 40 48   |
| .....             | 3                       | 44 10   | 24 23      | 68 33   |
| .....             | 34                      | 121 72  | 113 62     | 235 34  |
| .....             | 25                      | 95 72   | 315 46     | 411 18  |
| .....             | 9                       | 34 63   | 29 10      | 63 73   |
| .....             | 3                       | 12 68   | 6 76       | 19 44   |
| .....             | 4                       | 19 91   | 14 53      | 34 44   |
| .....             | 16                      | 91 35   | 40 83      | 132 18  |
| .....             | 9                       | 40 91   | 30 65      | 71 56   |
| .....             | 5                       | 50 67   | 15 21      | 65 88   |
| .....             | 8                       | 54 61   | 29 34      | 83 95   |
| .....             | 4                       | 31 18   | 17 74      | 48 92   |
|                   | 425                     | 1909 27 | 1661 66    | 3570 93 |

No. 19.—Schedule.—COST OF LAYING SERVICE PIPES.—*Continued.*

| NAME OF STREETS.        | NO<br>OF SER-<br>VICES. | WAGES.  | MATERIALS. | TOTAL.  |
|-------------------------|-------------------------|---------|------------|---------|
| ST. JEAN-BAPTISTE WARD  |                         | \$ Cts. | \$ Cts.    | \$ Cts. |
| Seaton .....            | 7                       | 65 25   | 26 35      | 91 60   |
| Amherst .....           | 6                       | 72 99   | 18 75      | 91 74   |
| Pantaleon .....         | 201                     | 1279 31 | 650 27     | 1929 58 |
| Montana .....           | 31                      | 97 91   | 102 49     | 200 40  |
| Maisonneuve .....       | 8                       | 43 92   | 30 02      | 74 00   |
| Plessis .....           | 8                       | 19 65   | 24 43      | 44 08   |
| Papineau Road .....     | 32                      | 203 75  | 109 10     | 312 85  |
| Dufferin .....          | 19                      | 114 62  | 72 77      | 187 39  |
| Champlain .....         | 6                       | 28 98   | 15 61      | 44 59   |
| St. Jean-Baptiste ..... | 31                      | 102 39  | 109 94     | 212 33  |
| St. Dominique .....     | 1                       | 89 02   | 6 65       | 95 67   |
| Mont-Royal Avenue ..... | 10                      | 26 08   | 22 27      | 48 35   |
| Berri .....             | 36                      | 126 71  | 116 34     | 243 05  |
| Marie Anna .....        | 2                       | 1 56    | 7 01       | 8 57    |
| St. Hypolite .....      | 5                       | 126 15  | 17 06      | 143 21  |
| Maple .....             | 32                      | 178 64  | 115 92     | 294 56  |
| Sanguinet .....         | 12                      | 231 46  | 40 57      | 272 03  |
| St. Urbain .....        | 5                       | 85 95   | 18 36      | 104 31  |
| St. Lawrence .....      | 5                       | 18 19   | 13 29      | 31 48   |
| St. Denis .....         | 20                      | 175 69  | 71 96      | 247 65  |
| Laval Avenue .....      | 49                      | 277 82  | 156 29     | 434 11  |
| Drolet .....            | 41                      | 148 86  | 119 89     | 268 75  |
| Cadieux .....           | 8                       | 192 19  | 23 30      | 215 49  |
| Rachel .....            | 18                      | 81 19   | 60 66      | 141 85  |
| Rivard .....            | 57                      | 138 87  | 179 86     | 318 73  |
|                         | 650                     | 3927 15 | 2129 22    | 6056 37 |
| HOCHELAGA WARD          |                         |         |            |         |
| Davidson .....          | 50                      | 166 86  | 146 56     | 313 42  |
| Cuvillier .....         |                         | 61 82   |            | 61 82   |
| Darling .....           | 24                      | 80 75   | 69 75      | 150 50  |
| Hudon .....             | 1                       | 78      | 9 73       | 10 51   |
| Ontario .....           | 12                      | 66 67   | 46 44      | 113 11  |
| Notre-Dame .....        | 34                      | 165 70  | 100 73     | 266 43  |
| Déséry .....            | 8                       | 34 04   | 29 02      | 63 06   |
| Frontenac .....         | 36                      | 292 29  | 128 97     | 421 16  |
| Seaver .....            | 2                       | 30 75   | 19 30      | 50 05   |
| Préfontaine .....       | 2                       | 11 68   | 8 36       | 20 04   |
| St. Michel .....        | 3                       | 12 98   | 8 73       | 21 71   |
| Mignonne .....          | 6                       | 36 81   | 23 11      | 59 92   |
| Hâvre .....             | 18                      | 134 43  | 61 08      | 195 51  |
| Logan .....             | 1                       | 24 62   | 17 39      | 42 01   |
| Marlborough .....       | 8                       | 41 86   | 33 90      | 75 76   |
| St. Catherine .....     | 77                      | 331 41  | 242 51     | 573 92  |
| Iberville .....         | 1                       | 8 68    | 5 84       | 14 52   |
|                         | 283                     | 1502 13 | 951 32     | 2453 45 |



Schedule.—COST OF LAYING SERVICE PIPES.—Continued.

| OF STREKTS. | No.<br>OF SER-<br>VICES. | WAGES.  | MATE-<br>RIALS. | TOTAL.  |
|-------------|--------------------------|---------|-----------------|---------|
|             |                          | \$ Cts. | \$ Cts.         | \$ Cts. |
| RIEL WARD.  |                          |         |                 |         |
| le.....     | 8                        | 6 24    | 20 33           | 26 57   |
| .....       | 3                        | 73 64   | 12 45           | 86 09   |
| .....       | 4                        | 53 68   | 11 20           | 64 88   |
| .....       | 17                       | 88 22   | 35 39           | 123 61  |
| .....       | 12                       | 49 20   | 40 36           | 89 56   |
| .....       | 6                        | 44 05   | 22 19           | 66 24   |
| .....       | 62                       | 76 89   | 52 11           | 129 00  |
| .....       | 3                        | 33 63   | 10 16           | 43 79   |
| .....       | 3                        | 27 07   | 13 26           | 40 33   |
| .....       | 1                        | 13 84   | 5 76            | 19 60   |
| .....       | 4                        | 21 01   | 18 41           | 39 42   |
| .....       | 20                       | 113 85  | 70 30           | 184 15  |
| .....       | 6                        | 64 51   | 22 57           | 87 08   |
| .....       | 9                        | 89 00   | 54 96           | 143 96  |
| .....       | 16                       | 50 29   | 49 36           | 99 65   |
| .....       | 2                        | 21 22   | 6 78            | 28 00   |
| .....       | 23                       | 130 05  | 81 25           | 211 30  |
| .....       | 3                        | 46 44   | 9 80            | 56 24   |
| adl..       | 22                       | 77 04   | 69 64           | 146 68  |
| .....       | 31                       | 198 22  | 105 92          | 304 14  |
| rs. ....    | 4                        | 16 85   | 14 35           | 31 20   |
| .....       | 1                        | 11 26   | 4 14            | 15 40   |
| .....       | 4                        | 35 85   | 26 80           | 62 65   |
| .....       | 38                       | 166 06  | 144 09          | 310 15  |
|             | 252                      | 1508 11 | 901 58          | 2409 69 |

| RECAPITULATION. |                          |          |                 |          | AVERAGE COST<br>OF EACH SERVICE. |                 |         |
|-----------------|--------------------------|----------|-----------------|----------|----------------------------------|-----------------|---------|
| S.              | No.<br>OF SER-<br>VICES. | WAGES.   | MATE-<br>RIALS. | TOTAL.   | WAGES                            | MATE-<br>RIALS. | TOTAL.  |
|                 |                          | \$ Cts.  | \$ Cts.         | \$ Cts.  | \$ Cts.                          | \$ Cts.         | \$ Cts. |
| .....           | 16                       | 107 56   | 51 77           | 159 33   | 6.72                             | 3.24            | 9.96    |
| .....           | 23                       | 87 14    | 77 93           | 165 07   | 3.79                             | 3.39            | 7.18    |
| .....           | 2                        | 56 95    | 13 86           | 70 81    | 28.47                            | 6.93            | 35.40   |
| .....           | 126                      | 937 09   | 508 28          | 1445 37  | 7.43                             | 4.03            | 11.46   |
| .....           | 274                      | 2312 95  | 1332 54         | 3645 49  | 8.44                             | 4.86            | 13.30   |
| e.....          | 328                      | 2081 31  | 1254 69         | 3336 00  | 6.34                             | 3.82            | 10 16   |
| .....           | 162                      | 1587 54  | 566 57          | 2154 11  | 9.80                             | 3.50            | 13.30   |
| .....           | 293                      | 1970 68  | 1061 75         | 3032 43  | 6.72                             | 3.63            | 10.35   |
| .....           | 425                      | 1909 27  | 1661 66         | 3570 93  | 4.49                             | 3.90            | 8.39    |
| tiste....       | 650                      | 3927 15  | 2129 22         | 6056 37  | 6.04                             | 3.28            | 9 32    |
| .....           | 283                      | 1502 13  | 951 32          | 2453 45  | 5.30                             | 3.36            | 8.66    |
| .....           | 252                      | 1508 11  | 901 58          | 2409 69  | 6.00                             | 3.58            | 9.58    |
|                 | 2834                     | 17987 88 | 10511 17        | 28499 05 | 8.294                            | 3 96            | 12.254  |

**No. 19 Schedule.—RECAPITULATION OF TOTAL COST OF I  
MAIN AND SERVICE PIPES.**

| WARDS.                 | \$ Cts.            |
|------------------------|--------------------|
| East.....              | 270 03             |
| Center.....            | 165 07             |
| West.....              | 5925 63            |
| St. Ann.....           | 80056 25           |
| St. Antoine... ..      | 91432 66           |
| St. Lawrence.....      | 29124 43           |
| St. Louis.....         | 30115 92           |
| St. James.....         | 52437 07           |
| St. Mary.....          | 34973 88           |
| St. Jean-Baptiste..... | 15634 77           |
| Hochelaga .....        | 7669 22            |
| St. Gabriel.....       | 29537 17           |
| Total.....             | <b>\$377351 60</b> |

TEST MADE WITH ARCHIBALD MINE COAL, FURNISHED BY HENRY DORELL & CO. WITH THE LEADWATER DEVICE IN COMMISSION.

| Engine started. | Engine stopped. | Time of pumping | Counter at start. | Counter at stop. | Coumte made. | Avg. strokes per minutes. | Coal consumed in lbs. | Lbs. of water raised to Flvy. per lbs. of coal. | Total lbs. of water raised to Reservoir per lbs. of coal. | Water meter at start | Water meter at stop | Cubic feet of water evaporated | Lbs. of water evap p lbs of c | Lbs. of residue found. | Percentage of residue. | Coal consumed per sq. ft. of grate bars per hr. | Coal consumed per H. P. per hr. | Average temp. of feed water. | Average water pressure in lbs. | Average steam pressure in lbs. |
|-----------------|-----------------|-----------------|-------------------|------------------|--------------|---------------------------|-----------------------|---|---|----------------------|---------------------|--------------------------------|-------------------------------|------------------------|------------------------|---|---------------------------------|------------------------------|--------------------------------|--------------------------------|
| 7.15 a m        | 5 15 p.m        | 10 hrs          | 037319068154      | 823658 60        | 17 620       | 2750 3                    | 48.538 000            | 22958.0   | 24459 0   | 1501 0               | 5 66                | 1,751                          | 9.7                           | 23.8                   | 3.04                   | 184.5   | 85                              | 107                          |                                |                                |

Foot lbs. duty per 100 lbs of coal 58,851.562

B. D. McCONNELL, Esq.

Supt. Water Work.

REMARKS.—As you will perceive by the large residue found, there is much in the coal that is not combustible, owing to which it was found necessary to clean the fires after about seven (7) hours run. There was no trouble in keeping up the steam to the required pressure necessary to run the engine full speed.

D. KEARNEY,

Engr. Low Level Pumping Works.













# ANNUAL REPORT

OF THE

SUPERINTENDENT

OF THE

**Montreal Water Works**

FOR THE

YEAR ENDING 31st DECEMBER 1891

apliments of

*B. D. McConnell,*

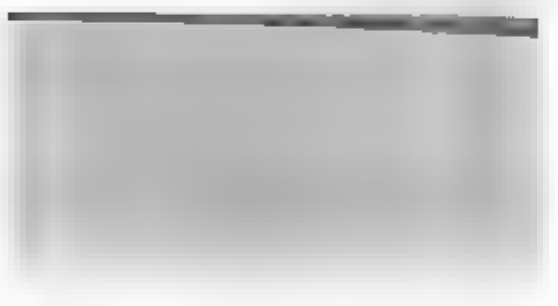
Superintendent Montreal Water Works

**Montreal :**

EUSÈBE SENÉCAL & FILS, PRINTERS,  
20, St. Vincent Street.

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1892



# ANNUAL REPORT

OF THE

SUPERINTENDENT

OF THE

**Montreal Water Works**

FOR THE

YEAR ENDING 31st DECEMBER 1891

PRINTED BY ORDER OF THE WATER COMMITTEE.



**Montreal :**  
**EUSÈBE SENÉCAL & FILS, PRINTERS,**  
20, St. Vincent Street.

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1892



# ANNUAL REPORT OF THE SUPERINTENDENT OF THE MONTREAL WATER WORKS

FOR THE  
YEAR ENDING THE 31st DECEMBER 1891.

---

WATER WORKS OFFICE, CITY HALL

Montreal, March 1st 1892.

*To the*

*Mayor, Aldermen and Citizens, of the City of Montreal.*

GENTLEMEN,

I have the honor to report on the operations of the Water Department for the year 1891. The subject is taken under the following heads, viz: 1. Aqueduct.—2. Low Level Pumping Works.—3. Machine Shop and Brass Foundry.—4. Tail Race.—5. Pipe Track and Pumping Mains.—6. Reservoirs.—7. High Level Service.—8. Pipe Laying.—9. Maintenance of Distribution and Service Pipes, Hydrants and Fountains.—10. Consumption of Water.—11. Meters and House to House Inspection.—12. Administration.—13. Water Analyses.—14. General Remarks. Besides which in the appendix will be found the annual reports of the Assistant Superintendent, Chief Engineers of Pumping Stations, Head Foreman, with tables showing work done and expenditure for the year. Also reports on water analyses.

## 1. AQUEDUCT.

The ordinary work of cleaning the side and berm ditches, cutting weeds along the banks and repairing fences was done. One farm bridge, that at Penniston's, was rebuilt; the cribwork abutments of all the farm bridges, but one, were renewed.

A considerable quantity of the old cap fence was altered to the common picket and rail fence.

The most considerable work done was the cutting down of the high spoil banks along the southern side of the Inland cut. These

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were of such a height and so badly graded on top that the frost coming out in the spring or, a heavy rain at any time, washed great quantities of the earth into the aqueduct. These spoil banks have now been cut down to a height of 10 to 12 feet and the top given a fall towards the back ditch. The front slope has been trimmed and the road between the foot of the slope and the edge of the aqueduct has been re-graded with a fall to the berm ditch. In many places a low retaining wall has been built to hold up the foot of the slope. It is believed this work will save the aqueduct from further filling up from this source. The amount appropriated for this work was \$6000 and the expenditure exceeded this sum by about \$25.00.

There was in the appropriations the amount of \$1000 for the purpose of diverting the drainage of a part of the Lower Lachine Road from the "Still Water Basin." This money however reverted to the treasury, because obstacles intervened to prevent the work being done. In the first place, the trustees of the Fraser Institute who were interested from the fact that it was proposed to make a ditch across one of their farms, objected that the ditch, from its size, would be inconvenient and likely to interfere with farming operations. The plan was therefore changed so as to bring all the drainage along the public road, but here the Road Trustees wanted to make conditions which would have been difficult to comply with. The work therefore was postponed in the hope of finding some plan which would meet the approval of all parties interested. This would probably enhance the cost but may result in the adoption of a better scheme than either of the two proposed.

Two men were employed as constables to patrol the aqueduct grounds and keep disorderly persons away.

A woman who had been an inmate of the Protestant Hospital for the insane at Verdun got away from those in charge of her and was drowned in the aqueduct.

From several causes, the water had to be drawn down in the aqueduct more frequently than usual.

The average level of water during the year, at the entrance to the aqueduct was 38.65 being 10 inches lower than the previous year. The average for the month of June was nearly 2½ ft. lower than for the same month in 1890.

### 2. LOW LEVEL PUMPING WORKS.

The repairs to the water power machinery were light, the most important being the re-cogging of the large bevel wheel on the counter shaft of No. 1 wheel. The cogs stripped on 28th April and the wheel was ready again and recommenced work, on 15th May.

No heavy repairs to wheels and pumps are anticipated this year though from the age and condition of Nos. 2 and 3 wheels their giving out would not be astonishing.

# V

The steam pumping engines Nos. 1 and 3 worked well during the year and are now in good condition, some overhauling and perhaps repairs of a minor nature may be looked for.

A second feed pump for the Heines Battery of boiler was provided. The three sets of boilers are in good order, the No. 2, from long use, carries very low pressure and is in consequence not suitable for running No. 1 engine.

The buildings are in fairly good condition but require painting. Repairs of any magnitude are required. For details concerning the works see report of the Engineer at page 8 of appendix.

The total water pumped by water power during the year was 2,749,000 gallons with an expenditure of \$5,412.37 making 6.18¢ per million gallons raised to Reservoir or \$0.00187 per million gallons raised one foot.

The quantity pumped by steam is 1,570,625,000 gallons at an expenditure of \$21,527.19 or \$13.7016¢ per million gallons pumped which equals \$0.0311¢ per million gallons raised 1 foot high.

Schedules Nos. 1 and 2 in appendix give work done and stores consumed by water power machinery; schedules 3 and 4 deal similarly with the steam pumping engines and No. 5 is a summary of predecessors.

The following is a table showing the cost of raising 1 million gallons of water 1 foot high by water power and by steam power for the year for the last 17 years and the average cost by each method for the same time.

| YEAR.                | BY WATER.     | BY STEAM. |
|----------------------|---------------|-----------|
| —                    | —             | —         |
| 1875.....            | \$0.0200..... | \$0.119   |
| 1876.....            | 0.0140.....   | 0.144     |
| 1877.....            | 0.0158.....   | 0.080     |
| 1878.....            | 0.0106.....   | 0.170     |
| 1879.....            | 0.0093.....   | 0.119     |
| 1880.....            | 0.0120.....   | 0.123     |
| 1881.....            | 0.0136.....   | 0.121     |
| 1882.....            | 0.0118.....   | 0.258     |
| 1883.....            | 0.0135.....   | 0.134     |
| 1884.....            | 0.0124.....   | 0.211     |
| 1885.....            | 0.0102.....   | 0.094     |
| 1886.....            | 0.0110.....   | 0.138     |
| 1887.....            | 0.0092.....   | 0.117     |
| 1888.....            | 0.0112.....   | 0.082     |
| 1889.....            | 0.0096.....   | 0.078     |
| 1890.....            | 0.0093.....   | 0.082     |
| 1891.....            | 0.0087.....   | 0.081     |
| Average of 17 years. | 0.0019.....   | 0.126     |

# ENGINE SHOP AND BRASS FOUNDRY.

The machine shop is in the same condition as somewhat out of repair, the whole shop was whitewashed. Another lathe was added during the year.

They also want a little paint. This as well as the work was unable of late years to do all the work required, but are found of great assistance in a lot of work turned out by the shop.

Various hydrants.

Various nuts and washers and I sent.

Various valve spindles.

Various pneumatic stop valves.

Various pipe branches.

Various waste drains.

Air air tube.

Various pneumatic stop valves.

Various couplings.



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- 1 doz. brass plugs for Wells' lamps.
- 34  $\frac{5}{8}$ " bolts and nuts.
- 6 steel mandrills for expanding lead pipes.
- 16 hydrant brass sockets.
- 31 Wrt. iron keys for wheel No. 2.
- 17 " " gibs " "
- 8 new fire irons.

### REPAIRS DONE IN MACHINE SHOP.

- 3 Boiler gauge cocks.
  - 5 Footpath augers.
  - 16 Hydrants.
  - 11 Air pumps for pneumatic stop valves.
  - 641 Pick axes.
  - 492 Tools for cutting and caulking pipes.
  - 261 Cold chisels.
  - 37 Fire irons.
- Brass castings delivered from Brass Foundry 19,747 $\frac{3}{4}$  lbs

### 4. TAIL RACE.

The ordinary repairs were not extensive, consisting of patching banks and fences at different points.

At the point where the old bed of the river St. Pierre crosses the weir bank of the Tail Race, there had been an opening left in the bank for the passage of water to supply cattle on the farms bounded by the said river St. Pierre, the Tail Race and the Lower Machine Road. The opening alluded to had a masonry abutment on each side and was spanned by wooden stringers and platform. Since the dam at the outlet of the Tail Race was removed the supply of water to the farms was quite insufficient. A year ago the bridge, which had been showing symptoms of decay, was thrown down by scour caused by a temporary dam in connection with another work and it was determined to do away with the bridge entirely and fill up the gap in the embankment, first putting in a cast iron pipe to give the required water to the farms, the supply end of said pipe to reach far enough up stream in the Tail Race to ensure a proper delivery. This was done, the pipe in the Tail Race being 12 inch and that through the bank with a 6 inch valve on the delivery side. The arrangement has worked satisfactorily. Most of the pipe used was second hand, consequently the work was inexpensive.

The banks of the Tail Race at several points are wearing away partly due to swift current and partly to steep slopes. At one point between the Wheel House and the Mullarky bridge, a deep hole

...and a considerable piece of the bank carried away  
...by the discharge from the river St. Placide  
...was along the front with stone filling will have

...over the Tail Race near the Wheel  
...The foundations have been injured by  
...since by boulders thrown on the  
...the bridge is what most requires attention.  
...Co. who own this bridge are responsible  
...were notified of its condition and made  
...repairs. They however promise to

...the bridge over the Tail Race at Wellington  
...in 1890 and suspended during winter  
...

...was resumed early in May. The contractor  
...operations at that time, but did not  
...at May or beginning of June when he  
...was necessary to go much deeper for the  
...was wanted on. The dams leaked badly  
...was lowered several times and for several  
...the workmen to excavate for the founda-  
...hard bottom was got, concrete, in which  
...was laid to within two feet of ordinary  
...the coarsed masonry commenced. At  
...Alderman stated that this work was  
...extravagantly. The Council thereupon  
...to investigate and report. The Com-  
...reported to Council that the contractor  
...sum to complete the work and that in  
...the offer, the work to be taken from him  
...The Council adopted the report and the offer  
...was rejected by the contractor, where-  
...was taken out of his control and put into  
...of Water Works for completion.  
...was dispossessed of the work on the 13th  
...about 3 1/2 courses above foundation of western  
...the eastern abutment the foundations  
...proceeded with the work on  
...to the Public on the 1st of August.  
...was \$27362.33 of which the Department  
...of work done under its immediate control,  
...the balance \$23909.80.

...caused much unfavourable com-  
...attempt on the part of some  
...the responsibility on the superin-  
...it was however was not difficult to under-

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stand. It was to relieve from blame, their friends, members of the Water Committee, who had been instrumental in giving out the job on such terms as to put the Department in the hands of the contractor. However the chairman of the committee and another member declared distinctly that the Superintendent was free from blame. The settlement with the contractor was not arrived at without much discussion and it was near the end of December before the final payment was made.

### 5. PIPE TRACK AND PUMPING MAINS.

The final payment on Mr. Nicholson's contract for a culvert under the Grand Trunk Railway was made without any allowance for extra cost for supporting the track during construction as claimed by the contractor.

The 30 inch mains of Atwater Avenue just south of Notre Dame street were connected together and a branch was taken from one of them at Notre Dame street, as a feeder for the distributing main of that street. St. Antoine street distributing main was connected to the 30" pumping main at Atwater Avenue. As was the 16" of Dorchester street between Atwater Avenue and Sussex street.

The 24 inch pumping main of Centre and Montmorency streets was produced along Guy street to St. James and on St. James eastward to Windsor where it was connected to the 24 inch laid in St. James street in 1890, thus completing the line from the 30" main, corner of Atwater Avenue and Centre street, to St. Sulpice street, south of St. Paul.

The municipalities of St. Cunégonde and St. Henry have encroached on Atwater Avenue, by laying drains and water pipes in it. The City has taken no definite action in the matter.

The Road Department is also desirous to get possession of Atwater Avenue and reported to Council asking to have it handed over to them. As this Avenue was bought by the City for the Water Department to lay its pumping mains in, it seems proper that no underground rights in it should be parted with. There is no serious objection to the road being graded and macadamized and thrown open to the public, but the right to go beneath the surface should be denied to all unless by special permit from the Water Department.

The valves and valve chambers on the pumping mains were examined, the former oiled, and any necessary repairs to either were done. These were light however.

The most serious break that has occurred to a pumping main in this City, took place on the morning of Dec. 23rd, when a piece was blown out of the 24" main of St. James street near Imperial Avenue. The accident happened between 1 and 2 o'clock a. m.

## X

The street was immediately flooded from Mountain to Windsor. As the cover of the valve chamber at Windsor street had about 18 inches of water over it, that valve could not be closed. The valve at Guy street was also unavailable from surface water drained into the chamber so that the shutting for the break included many side streets and occupied about 4 hours during which time the pressure all over the City became almost nil and in many parts the pipes were empty. As soon as the break occurred the pumps were stopped and the reservoirs closed. The pump started again at about 5 o'clock and the reservoirs opened about the same time.

The fracture of the 24 inch pipe showed metal without flaw, a little over the specified thickness and fairly even. There had been an opening or closing of valves such as might be supposed to cause water hammer or in fact there is nothing to show what caused the leak. The piece blown out was about  $5\frac{1}{2}$  feet long and averaged 2 feet in width. It was a clean break of only one piece.

### 6. RESERVOIR

Both reservoirs underwent slight repairs to the masonry, in the way of repointing the joints damaged by the action of the ice.

Nothing was done to the division wall of McTavish reservoir. This should be attended to and if possible made water tight, as it is important to be able to hold one side in reserve, whilst drawing off from the other.

A new fence was made at north east side of McTavish reservoir between the end of the retaining wall and the eastern gate.

The retaining wall along Carlton Road requires a new covering board along the greater part of its length.

Painting of fences at McTavish reservoir will be necessary this year.

A new hut was provided for the watchman at the Peel street reservoir.

### 7. HIGH LEVEL PUMPING STATION.

The dwelling requires some alterations made to closets, which are not in a sanitary condition. The closet of No. 1 engine room must also be overhauled and perhaps a new one put in.

The roof of coal shed leaks and must be repaired. The rest of the buildings are in good order.

The new boiler supplied by Mr. Wm. C. White was completed and in working order about the beginning of May. It is up to specification in all respects. In connection with it a blower was put up to be run by a water motor. This has not, so far, worked very satisfactorily, due probably to the small size of the motor; at all events the requisite speed is not attained. It is hoped this may

# XI

be remedied by changing the size of pulleys and of water noze and possibly enlarging the feed pipe.

Schedules 6 and 7 in appendix, show the total number of gallons pumped during the year to have been 205,298,473 with an expenditure (see schedule 16) of \$5,808.34 being at the rate of \$28.43<sup>18</sup>/<sub>100</sub> per million gallons pumped or 13<sup>35</sup>/<sub>100</sub> c. per million raised 1 foot. The cost of raising 1 million gallons 1 foot high was :

|                       |         |
|-----------------------|---------|
| In 1876.....          | \$0.240 |
| 1877.....             | 0.253   |
| 1878.....             | 0.355   |
| 1879.....             | 0.283   |
| 1880.....             | 0.274   |
| 1881.....             | 0.226   |
| 1882.....             | 0.256   |
| 1883.....             | 0.286   |
| 1884.....             | 0.318   |
| 1885.....             | 0.376   |
| 1886.....             | 0.250   |
| 1887.....             | 0.187   |
| 1888.....             | 0.197   |
| 1889.....             | 0.121   |
| 1890.....             | 0.135   |
| 1891.....             | 0.133   |
| Average of 16 years.. | 0.243   |

For details as to work at the pumping station see report (page 12 in appendix) of Mr. Jas. Coleman, engineer.

## 8. PIPE LAYING.

The total length of cast iron pipes laid in the city during the year 1891 is 82,520 feet, equal to 15<sup>3</sup>/<sub>4</sub> miles, the weight of metal being approximately 3,300 tons of 2,240 lbs. each. The different sizes of pipes laid, their lengths and weights, and the number of valves of different sizes put in, are as follows :

|               | feet. | tons. | valves. |
|---------------|-------|-------|---------|
| 30 inch pipes | 500   | 85    |         |
| 24        "   | 1721  | 215   | 1       |
| 20        "   | 1800  | 172   | 1       |
| 16        "   | 3692  | 258   | 3       |
| 12        "   | 26430 | 1215  | 58      |
| 10        "   | 13492 | 445   | 33      |
| 8         "   | 32263 | 871   | 89      |
| 6         "   | 987   | 17    | 29      |
| 4         "   | 1635  | 19    | 72      |
| Totals.....   | 82520 | 3297  | 386     |



### XIII

The daily average of 1890 was 14.40 millions, so that last year's consumption is about 7000 gallons per day less than that of '90. The average pumping by water power falls short of that of 1890 by 637,000 gallons, whilst the quantity pumped by steam power is increased by 629,000 gallons daily. This falling off in the water power pumping is accounted for by the fact that the average height of water in the river at the head of the aqueduct during the year, was 10 inches less than in '90, whilst for the month of June it was nearly 2½ ft. less than the same month in '90.

The purposes to which the water pumped is applied are as follows.

|                       |   |                                      |                    |    |
|-----------------------|---|--------------------------------------|--------------------|----|
| <b>No<br/>revenue</b> | { | Flooding private rinks.....          | <del>427,190</del> | .4 |
|                       |   | Fires.....                           | 14,432,000         |    |
|                       |   | Watering streets.....                | 65,664,000         |    |
|                       |   | Public fountains.....                | 41,852,460         |    |
|                       |   | Harbour latrines and drinking taps.. | 12,227,803         |    |
|                       |   | Lubricating steps of turbines .....  | 17,542,744         |    |
|                       |   |                                      | <hr/>              |    |
|                       |   |                                      | 152,155,897        |    |

**Metered and charged at meter rates.**

|  | Mill of gals.     |
|--|-------------------|
| Factories & engines.....   | 160.10            |
| Elevators .....  | 168.97            |
| Railways .....   | 101.45            |
| Schools, convents &c.....  | 26.05             |
| Hospitals and Homes.....   | 7.04              |
| Hotels .....   | 37.72             |
| Church organs.....   | 6.96              |
| Breweries .....  | 26.59             |
| Miscellaneous.....   | 18.07             |
| Outside municipalities.....  | 44.72             |
|  | 597.75            |
| Balance, that charged for at rates based<br>on rental, being principally domestic<br>consumption ..... | 4503.46           |
| <del>That producing no revenue.....</del>  | <del>152.15</del> |
|  | 5253.36           |

#### 11. METERS AND HOUSE TO HOUSE INSPECTION.

A great number of worn out meters were got rid of during the year. There are some remaining which are not entirely reliable and must be weeded out as soon as possible.

## XIV

By order of the Water Committee some "Hersey" meters have been bought and are now on trial.

The total expenditure under the head "Meters" (see schedule No. 14) was \$10,602.24 a decrease of about \$200 from the previous year. The house to house inspection has gone on fairly well. A large increase in the number of Inspectors has been made in the last two years and a foreman has recently been placed over them. The latter appointment was very necessary and would have been made some years ago, but for the difficulty of finding a suitable man; that however was overcome. The other newly appointed inspectors were put on by the Committee. There are now twenty many inspectors. Better work could be done with fewer but properly selected men. The report of the assistant superintendent and the schedule No. 11 give detailed statements in regard to the subjects under this head.

### 12. ADMINISTRATION.

The year's expenditure is given in detail in schedule No. 18.

The amount taken from Revenue to meet cost of maintenance was \$164,516.31. That from "Loans" for permanent improvement was \$354,223. It was principally for pumping and distribution main hydrants and service pipes.

An assistant to the accountant was appointed temporarily and his appointment will probably be made permanent.

### 13. WATER ANALYSIS.

The reports of Drs. Ruttan & Johnston on the quality of the water supplied to the City of Montreal, based on a series of analyses covering one year, will be found in the appendix.

Samples of water for the same period were also furnished to Prof. Pfister but his report is yet incomplete and cannot be given this year. A table of the results of his analyses for the first few months has been received and will be found in the appendix.

### 14. GENERAL REMARKS.

The general condition of the works has been good and efficient during the year.

There is generally not enough money granted for repairs: painting, the consequence being most of the property has a somewhat uncared for appearance. I believe it would be sound policy to keep the buildings, fences, ditches, &c., &c., always in a first state of repairs. Even in point of economy it would be preferable because repairs not attended to in time increase in cost, at a rapid rate.



## XV

lack of water power for pumping during 1891 should arouse Water Committee to urge on the Council the completion of the aqueduct, which would furnish power sufficient to do the lighting for the City as well as pump the water required, at the interest on which, would be less than the amount paid annually for lighting alone. But as such a work takes time, more power should be provided at once. It ought to be ready by January next.

There will be further improvements in pipe laying required this

Many four inch mains should be replaced by larger mains where there are dead ends to eliminate in various parts of the City.

Important work too is that of carrying a High Level 12" mains

Prince Arthur street from University to Cadioux and up to join the High Level main of that street between St. Baptiste and Rachel. This is very important because at present there being only one line to the North Western part of St. Baptiste ward, it is deprived of water whenever repairs are necessary on its single supply main.

Coming to the many changes in the supply mains and positions of valves, it was considered advisable to train some men as valve-men with that view 4 men were detailed (2 for the eastern and 2 for the western half of the City) to go all over their divisions, find valves, note the positions in books and mark on the opposite side the distance out from line of street to valve. Whenever repairs are required these men will be employed and from this service it is hoped they will soon become familiar with the work and be available in any case of emergency.

I have the honor to be

Your obedient servant,

B. D. McCONNELL,

*Supt. M. W. W.*



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*REPORT of J. O. ALFRED LAFOREST, Assistant-Superintendent of Water Works, on Meters and House service inspection, for the year 1891.*

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B. D. McCONNELL, Esq.

*Supt. M. W. W.*

DEAR SIR,

I herewith beg to submit, for your information, the following brief report upon the Meter and House-service inspection branches of the Water Department for the year 1891.

**METERS.**

The number of meters in use, at the end of the year, was 702 showing an increase of 9 over 1890. The City owns 646, the other 56 belong to private individuals or companies.

There were 81 new places metered and 66 meters in use were discontinued.

There were 130 changes of meters made for various reasons some being out of order and others too small.

The number of meters damaged by frost was 16.

In all these cases the damages were charged to the tenants, as there is a by law holding them responsible for all damages to the instruments on their premises.

The Department purchased during the year 53 new meters, viz:—

|            |   |    |               |        |
|------------|---|----|---------------|--------|
| 26 CROWN   | { | 5  | $\frac{1}{2}$ | inch   |
|            |   | 5  | 2             | inches |
|            |   | 8  | 3             | do     |
|            |   | 8  | 4             | do     |
| 15 EMPIRE. | { | 10 | $\frac{1}{2}$ | inch   |
|            |   | 3  | $\frac{3}{4}$ | do     |
|            |   | 2  | 2             | inches |
| 12 HERSEY  | { | 9  | $\frac{1}{2}$ | inch   |
|            |   | 3  | 1             | do     |
| Total, ... |   | 53 |               |        |

There were also 4 meters purchased by private parties ; viz:—

|            |   |   |          |
|------------|---|---|----------|
| 3 CROWN    | { | 1 | 2 inches |
|            |   | 1 | 4 do     |
|            |   | 1 | 6 do     |
| 1 EMPIRE : |   | 1 | 1 do     |
| Total..... |   | 4 |          |

The following is a list of meters that were completely worn out and sent to scrap. .

|                  |   |     |                |        |
|------------------|---|-----|----------------|--------|
| 44 Union :       | { | 36  | $\frac{5}{8}$  | inch   |
|                  |   | 8   | 1              | do     |
| 33 BOTANY UNION  | { | 4   | $\frac{5}{8}$  | inch   |
|                  |   | 18  | $\frac{3}{4}$  | do     |
|                  |   | 3   | 1              | do     |
|                  |   | 3   | $1\frac{1}{2}$ | do     |
|                  |   | 2   | 2              | inches |
|                  |   | 1   | 3              | do     |
|                  |   | 2   | 4              | do     |
| 5 CROWN :        | { | 3   | $\frac{3}{8}$  | inch   |
|                  |   | 1   | $\frac{1}{2}$  | do     |
|                  |   | 1   | 1              | do     |
| 11 WORTHINGTON : | { | 8   | $\frac{5}{8}$  | inch   |
|                  |   | 1   | $1\frac{1}{2}$ | do     |
|                  |   | 2   | 2              | inches |
| 11 GEM :         | { | 74  | $\frac{1}{2}$  | inch   |
|                  |   | 22  | $\frac{3}{4}$  | do     |
|                  |   | 12  | 1              | do     |
|                  |   | 2   | $1\frac{1}{2}$ | do     |
|                  |   | 1   | 2              | inches |
|                  |   | 1   | 4              | do     |
| 4 CONTINENTAL :  |   | 4   | $\frac{5}{8}$  | inch   |
|                  |   | 209 |                |        |

The same meters as before (11) were used this year at the harbour latrines and drinking fountains.

we were able to save the same 5 months of the year as last year.

The water used by each last year and the present is as follows:

|                            | Millions of<br>Gallons |
|----------------------------|------------------------|
| Factories and engines..... | 142.32                 |
| Railroads.....             | 25.15                  |
| Canals.....                | 20.45                  |
| Domestic consumption.....  | 26.46                  |
| Hospitals and Homes.....   | 7.44                   |
| Hotels.....                | 37.22                  |
| Church organs.....         | 6.22                   |
| Universities.....          | 26.50                  |
| Municipalities.....        | 13.47                  |
| Outside city limits.....   | 44.22                  |
| <b>Total</b> .....         | <b>307.53</b>          |

Showing a diminution of 1.47 per cent with 1890.

### HOUSE SERVICE INSPECTION.

On the 16th December 1890 the committee appointed inspectors so that we started the year 1891 with 9 inspectors.

On the 24th November the committee appointed 5 inspectors making in all 14.

On the same date the committee appointed the foreman that I asked in my last year's report.

The last days or weeks of the year were employed in new men and preparing them all to the new system of inspection. This new system of inspection consists in having all working on the same ward and under the constant control of one foreman instead of being one in each ward, as before.

With this new system of inspection we will visit the wards in 3 months instead of 8 or 9 months as before.

The result of this inspection was the discovery and stoppage of waste from defective fittings as enumerated below, viz :

| <del>Entered out</del>              |      | 1890.   | Galk<br>per<br>hour. | 1891. | Galk<br>per<br>hour. |
|-------------------------------------|------|---------|----------------------|-------|----------------------|
| Bib cocks <del>out of repair.</del> | 3763 | wasting | 42485                | 4180  | wasting 53227        |
| Urinals cocks. <del>do</del>        | 82   | do      | 1561                 | 61    | do 1148              |
| Ball " <del>do</del>                | 2006 | do      | 37614                | 3334  | do 67606             |
| Stop " <del>do</del>                | 54   | do      | 817                  | 68    | do 1045              |
| Closet " <del>do</del>              | 191  | do      | 5238                 | 189   | do 4623              |
| Basin " <del>do</del>               | 263  | do      | 3357                 | 382   | do 4607              |
| Closet valves <del>do</del>         | 126  | do      | 2860                 | 373   | do 8252              |
| Water closets <del>do</del>         | 36   | do      | 1143                 | 20    | do 307               |
| Pipe burst                          | 741  | do      | 12906                | 676   | do 12872             |
|                                     | 7262 |         | 108041               | 9283  | 153687               |

The following irregularities were also found :

|                               |    |         |      |                   |
|-------------------------------|----|---------|------|-------------------|
| Taps open to prevent freezing | 18 | wasting | 675  | gallons per hour. |
| " " flush drains.....         | 16 | "       | 630  | do do             |
|                               | 34 |         | 1385 |                   |

|  |     |
|--|-----|
| Using water illegally for building purposes..... | 52  |
| " hand hose illegally.....                       | 164 |

There were 399 sounds heard on service pipes. In all cases the reports were made to the shop and repaired by the Department if the leak was on the street.

Every case of illegal use of water was arrested as soon as discovered.

The number of prosecutions in the Recorder's Court was 91 against 58 last year.

The number of houses inspected was 84159.

#### COMPARISON OF METER RATES WITH RATES BASED ON ASSESSED RENTAL.

Gallons.

The total quantity of water pumped in 1891 was ... 5,253,374,740

giving no direct revenue :

|                                |            |               |
|--------------------------------|------------|---------------|
| odding private rinks &c.....   | 437,190    |               |
| -es.....                       | 14,432,000 |               |
| terring streets.....           | 65,664,000 |               |
| olic fountains.....            | 41,852,160 |               |
| rbour.....                     | 12,227,803 |               |
| crops of turbines.....         | 17,542,744 |               |
|                                |            | <hr/>         |
|                                |            | 152,155,897   |
|                                |            | <hr/>         |
| Balance producing revenue..... |            | 5,101,218,843 |

at charged for at meter rates ;

|   |             |             |
|---|-------------|-------------|
| ilways (including Street Railway)...                          | 101,442,524 |             |
| ctories and Engines.....                                      | 160,179,554 |             |
| Melevators (exclusive of those at Hotels<br>and Railways..... | 168,974,265 |             |
| Breweries.....  | 26,592,985  |             |
| Hotels.....   | 37,721,684  |             |
| Schools, convents & colleges.....                             | 26,054,389  |             |
| Hospitals and Homes.....                                      | 7,038,124   |             |
| Churches (for organs).....                                    | 6,962,785   |             |
| Miscellaneous (Livery stables, rinks<br>restaurants &c).....  | 18,072,756  |             |
| Outside City Limits.....                                      | 44,719,992  |             |
|   |             | <hr/>       |
| Total.....  |             | 597,758,438 |

|  |               |
|--|---------------|
| Balance being that charged for at rates<br>based on rental and special rates and<br>including waste..... | 4,503,460,405 |
|--|---------------|

The revenue from water in 1891 was :—

|   |              |
|---|--------------|
| That from metered water including rent<br>of meters ...               | \$109,933 54 |
| Revenue from water based on rental<br>and sundry special charges..... | 634,160 12   |
| Total revenue for 1891.....   | 744,093 66   |

Gallons.

|   |               |
|---|---------------|
| Water sold at rates based on rental...                            | 4,503,460,405 |
| Revenue from same ....  | \$634,160.12  |
| being at the rates of 14 $\frac{1}{100}$ cents per 1,000 gallons. |               |



|   |               |
|---|---------------|
| Water sold at meter rates.....                                  | 597,758,438   |
| Revenue from same.....  | \$109,933.54  |
| being at the rate of $18\frac{3}{8}\%$ cents per 1,000 gallons. |               |
| Total water sold.....   | 5,101,218,843 |
| Revenue .....   | \$744,093.66  |
| being at the rate of $14\frac{5}{8}\%$ cents per 1000 gallons.  |               |

The monthly inspection and reading of all meters in use has been kept up as usual.

Your obedient servant,

J. O. ALFRED LAFOREST,

CIVIL ENGINEER,

*Assistant-Superintendent,*

M. W. W.

MONTREAL WATER WORKS OFFICE }  
 City Hall,  
 21st March, 1892. }

LOW LEVEL PUMPING STATION, JAN. 14TH 1892.

B. D. McCONNELL, Esq.

*Superintendent Water Works.*

DEAR SIR,

I respectfully beg to submit my annual report for the year ending December 31st 1891.

No 1 WHEEL HOUSE.

All the repairs that at present appear necessary are some patching to the flooring and walls the latter of which, with the ceiling require washing.

Nos. 2, 3 & 4 WHEEL HOUSE.

The repairs to this building, will also consist of patching the floor and washing the walls.

THE WORK SHOP.

The extension of this building is in the same condition as when last reported, nothing having been done to it, the interior requires painting and white washing, and some other slight repairs. There was another new lathe added to the shop tools, which is rendering good service to the department.

THE BRASS FOUNDRY.

This building is in fair condition requiring only an application of white wash.

THE DWELLINGS.

No repairs were done to these buildings excepting the renewing of the back stairs. The exterior is sadly in need of painting.

No 1 ENGINE HOUSE.

This building is in good condition, excepting the paint, two coats of which would very much improve its appearance.

No. 3 ENGINE HOUSE.

This building is in good repair at present.

## THE BOILER HOUSES.

Are in fair condition, the repairs will be slight.

## THE COAL SHED.

This building is in fairly good condition, but is also badly in need of two coats of paint. The weigh house attached is very much frost sprung and in need of considerable repairs.

## THE GROUNDS.

The grounds are in good condition, with the exception of the slope between the Wheel and Engine Houses, which should be newly sodded. A new stairs leading to the Engine House will be necessary.

### No. 1 WHEEL.

This wheel, as anticipated, stripped the cogs of the large bevel wheel on the counter shaft on the 28th of April, and started on the 15th of May with cogs renewed, since which time the wheel has worked almost constantly performing good service. It is at present in fairly good condition.

### No. 2 WHEEL.

This wheel started on the 24th of March after undergoing heavy repairs, and worked very well but required frequent renewing of the gibs and keys of the upright and radical arms. The plunger of the center pump was taken out and repaired and new nuts furnished.

The bucket valve was refitted, put in good order and replaced in position and has worked well since. A crack made its appearance in the wrought iron rim of the wheel on the 20th of August which does not appear to be of a serious nature. Only the usual repairs are likely to be required during the year.

### No. 3 WHEEL.

This wheel may be credited with very good behaviour during the year, the repairs were many but slight. It is at present working well.

### No. 4 WHEEL.

This wheel also did very well and appears at present able for another year's work, without much overhauling.

### NO. 1 ENGINE

This engine was worked well during the year and is in the best of working & working condition. It is noted that the water pumpings were in good order and the engine was in good condition. I am of opinion that it will be necessary to run the engine for some time which will require the employment of one or two men. It is noted that the engine was in good condition. The new steam pump for feeding the boiler is giving good satisfaction.

### NO. 2 ENGINE

This engine is also in good order and working well and will only require such repairs as are consequent upon the usual running up of running machinery.

### NO. 1 BATTERY OF BOILERS

This battery worked very satisfactorily during the year. The doors were furnished with new cast iron hinges and four of the doors were removed. The boiler fronts were also removed as the workmen report. The boiler fronts, doors and four pipes on each boiler, will require painting and the building will be working.

### NO. 2 BATTERY OF BOILERS

This battery is in work during the year, they are of little service to the works, being built principally to furnish steam to the two engines now removed, they cannot be used for furnishing steam to No. 1 Engine as their pressure capacity is only 40 lbs. whereas that required to run the engine is 100 lbs per square inch.

They are in fairly good order however and can be used to furnish steam to No. 3 Engine when required, they will all require to be painted.

### NO. 3 BATTERY OF BOILERS

This battery is also in good order, they are the ones used to furnish steam to No. 3 Engine. I cannot at present see that they will require more than the ordinary attention during the year.

### THE PORTABLE STEAM PUMP AND BOILER.

This boiler is in the same leaky condition as when last reported nothing having been done to it, in fact it is much worse having

been considerably damaged by the breaking away of the platform on which it was placed while working at the Tail Race Bridge.

The furnace door, the injector pipes, valves and connections, the steam gauge and try cocks were broken off and lost in the Tail Race. All the connections between the steam drum and boiler were also broken.

It was sent to the Eagle Foundry where it was repaired in a hurry. The pump and its parts are much worn, as is natural when it is considered that it has done twenty years service. The splendid service done by the centrifugal pump used at the laying of the main, on St. James street west last summer clearly demonstrates that it is the best kind of pump for such service. I would therefore recommend that no time be lost in furnishing the Department with two four inch centrifugal pumps, also the proper boiler and appurtenances for working the same, as our old one cannot be considered reliable for much service.

In conclusion, I beg to render you my sincere thanks for the able assistance you so kindly gave me in the discharge of my duty.

The whole respectfully submitted,

I have the honor to be, Sir,

Your obedient servant,

D. KEARNEY,

*Engineer.*



The tubes of water heater under this boiler are worn out, we will require a new one. I would recommend the new one to be made of brass tubes; the bends and flanges of the old one can be put in the new one.

### THE OLD ENGINE HOUSE.

Is in good repair except the water course outside which is all broken up by frost. I would recommend a new one to be laid with wooden blocks.

### THE NEW ENGINE HOUSE.

Is in good repair. I require a pair of travelling cranes or instead four iron girders to lay on the cross beams which would answer as well and come much cheaper. The place is much in need of a store room to keep supplies.

### THE BOILER HOUSE.

The new porches and the sky lights add much to the comfort of the room. There is a leakage of surface water coming through the back walls which wants to be stopped as soon as possible. This room is badly in need of a concrete floor; also a cast iron covering under flue of old boiler, it was covered with flagstones which are all broken up with heat. There has been a water motor and fans placed in this room to give a forced draught, which adds much to quickness in getting up steam.

### THE COAL SHED.

The roof of which is leaking and requires fixing this coming summer, otherwise this building is in good condition.

### THE McTAVISH RESERVOIR

The supply from this reservoir was continually on the city during the past year, with exception of 3 hours, 25 minutes, on morning of December 22nd owing to a break in main pipe on St. James street, it was cut off at 1.15 and let on again at 4.40 a.m.

The front wall of this reservoir underwent a light repair during the summer, the joints that were injured by ice were grouted and pointed with cement and are in good repair. The old portion of centre-wall wants to be repaired, it leaks so badly from one side to the other that we cannot make a reserve in either. The masonry in back wall requires grouting and pointing with cement, also to be puddled with clay, back of wall, as considerable surface water

[illegible]

The running light in the house is a small attachment to the wall and carries the colors of lightening bolts etc. The light is not very large. I would recommend two more lights in the garden. One in the north west end, and one on the east side. The wall light is a nice purchase.

There is a small boat wanted to enable us to get on house at  
Sandy on the water

The winter lake around reservoir property requires special

## THE HIGH LEVEL RESERVOIR

Underwent some repairs last summer in putting and grouting the joints of the masonry which had been injured by ice and the leakage through front wall was repaired. There is some surface water running into Reservoir through back and end walls which will require attention next summer.

There was a new sentry house put up for watchman which is a great improvement on the old one.

## THE DWELLING

Requires some sanitary improvements, the extension of the engine room closet to top of building and the closets of dwelling placed therein. This would cause the pipes to be removed from one of the principal rooms of the house which they at present pass through and which causes a disagreeable, dangerous smell.

The outside windows want painting they have not been done for years.

The steam heating pipes in dwelling are leaking and should be renewed.

## THE 'TELEPHONES.

This service was very good during the past year and our prompt communication with Low Level pumpings and all other stations of the Department owing considerably to having a branch of the Bell Telephone in addition to our private one.



## THE SCALES

Want considerable repairing, in fact a new one would be cheaper than trying to fix the present requirements. One of the beams broke last summer while weighing coal, we made a temporary repair by bolting it together with iron straps. Should you decide on getting a new one I think wrought iron beams would last better than wooden ones. The scales were tested twice last year by Revenue Inspectors, on account of them breaking down.

## THE VALVE HOUSE.

The walls require some pointing outside. The roof, doors, windows, ceiling and cornices to be painted. The floodgates in overflow passage are decayed and want renewing. A new water float and chain, are required, the present ones are pretty well worn out, also some iron braces to stay valve-rods in well, they are temporarily fixed with wooden ones.

In conclusion I beg to call your attention to the quality of the Welsh coal supplied to us this year, it was of a very poor quality and very hard to get along with, from the present mode of screening it is necessary to have it passed through two inch mesh screen, before delivery.

The whole respectfully submitted.

I have the honor to be,

Sir,

Your obedient servant,

JAMES COLEMAN.

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## WATER WORKS SHOP, JANUARY, 1892.

B. D. McDONNELL, Esq.,

*Superintendent Water Works.*

DEAR SIR,

I respectfully submit the report in detail of the work done  
my supervision during the year ending December 31st 1891

## PIPE LAYING.

New main pipes were laid in the following streets as follo

## 24" MAINS.

Guy Street, from William to St. James Street.

St. James, from Guy to Windsor Street.

Henry, from St. Catherine to Sherbrooke.

St. Sulpice, from near St. Paul to Commissioners.

A 24" connection was made across Sherbrooke on St  
Street.

Two gaps left on Atwater Avenue's new 30" main were 1  
12" connections were made across Notre-Dame and St.  
Street. This new 30" pipe was tapered down and conn  
St. Antoine Street 12."

## 30" MAINS.

Guy Street, from St. James to Dorchester Street.

Amherst, from Craig to Notre-Dame.

Pine Avenue, from Arcade to St. Urbain.

Atwater Avenue, from 30" main South of Dorchester  
main on Dorchester Street.

## 16" MAINS.

Dorchester, from Fort Street to Atwater Avenue.

Amherst, from Sherbrooke to Roy Street; besides 12" 10"  
mains in different streets.

## NEW MAINS.

New main pipes will have to be laid in many streets for  
reasons; amongst the most important are the following:

## 30" MAINS

Connect new 30" to old 30" on Atwater Ave. at St. Antoine

**24" MAINS.**

Commissioners from St. Sulpice to Berri Street.  
 Berri from Commissioners to Notre-Dame Street.  
 Notre Dame from Berri to Papineau Road.  
 St. Denis from Sherbrooke to Pine Avenue.  
 Lower 24" across, C. P. R. bridge at Ontario street.

**20" MAINS.**

Park Avenue from Sherbrooke to Pine Avenue.  
 Pine Avenue " St. Lawrence to St. Denis.

**16" MAINS.**

St. Patrick from Island Street to Cote St. Paul connecting with one of the 30" pipes at Atwater Ave.  
 Cadioux Street from Prince Arthur to Duluth.  
 Notre Dame from Atwater Avenue to Fulford.  
 Besides many others of smaller diameter too numerous to mention here.

**REPAIR TO MAINS.**

St. James street 24" main broke during the night of the 22nd of December last and caused considerable damages, the cause of aforesaid break could not be ascertained. This pipe as well as all the pipes laid by our Department are put to a severe test before they are laid. This is the only break that occurred this year on the 24" mains.

The breaks on smaller pipes were as follows: two 12", one 10", one 8", ten 6", and twenty-five 4". The cause of so many breaks on small pipes is mostly due to old age, and also to sewer cuts made across said pipes.

|             |     |                  |   |
|-------------|-----|------------------|---|
| Four        | 24" | joints blown out |   |
| One         | 16" | "                | " |
| Sixteen     | 12" | "                | " |
| Eight       | 10" | "                | " |
| Six         | 8"  | "                | " |
| Twenty-six  | 6"  | "                | " |
| Thirty-four | 4"  | "                | " |

One 6" and 9-4" valve spindles were repaired.

Considerable repairs were done to the pipes in the Exhibition grounds. Four iron hydrants were put in, in place of the old wooden ones. The pipe on the south side was extended. One hydrant was put in on Park Ave. near Mount Royal Avenue.

## HYDRANT IMPROVEMENT

New hydrants were put in on the line of all the main pipes laid during the year. New hydrants were also put in many streets on the old mains.

Four more hydrants were put in for watering purposes; but they will now be used for fire.

The old kind of hydrants with wide and large iron covers about the rim changed for new pattern hydrants of our pattern, as the wide covers and hydrants in use were such that the iron covers are very dangerous when not locked on them exposing pedestrians to serious injuries.

Eight hundred and twenty-nine hydrants were reported from in January. Seven hundred and nineteen in February, four hundred and sixty-two in March, and seventy-nine in December 1890 giving a total of 2068 hydrants reported from for the whole winter 1891 & 92.

New hydrants will be wanted in many parts of the city where they are now too far apart.

No gaily dressed children should be allowed near the hydrants; and the streets should be at least six feet from them.

One hundred and seventy-five hydrant valves were renewed. Seventeen hydrant caps were broken and repaired. The inexperience of some people using the hydrants in making drains &c., one of the causes of so many roads being broken. The contraction by frost has also been the cause of a few of the breaks.

## SERVICE REPAIRS.

Sixty five services were found broken across sewer cuts. Sixty four couplings were found leaking. These in most cases were caused by being disturbed in making sewers &c.

Fifty eight services were burst in walls generally caused by the action of lime in said pipes, also by frost.

One hundred and fifty five ground cocks were renewed for old age; or larks were out.

Five hundred and forty rotten wooden boxes were replaced by iron ones. Fourteen hundred and seventy three wooden boxes were renewed, where permanent sidewalks were made.

Two hundred and four old kind stopcocks were replaced by new pneumatic ones. There has been only one service froze outside last winter, and one hundred and fifty frozen inside house also fifty one services frozen in wall. The cause of so many services freezing inside houses, and in walls is the general neglect of people, who think of protecting their cellars only when every thing is frozen in them.

**There were forty-six false reports investigated. One thousand and fifty seven leaks were repaired on the services. The causes of so many leaks are so numerous, that it is impossible to state them all in this report; but the two immediate ones are the contact of sewers and old age.**

## FOUNTAINS &c.

**The Place d'Armes fountain has been removed to the Western park.**

**A new trough and drinking tap were put in on Mount Royal avenue near the exhibition grounds. The drinking taps in Fletcher's field should be replaced by handsome iron ones; and the pipe should be extended to the north side of the orchard and another drinking tap placed there. This would be a great convenience to people who now have to go a great distance for water when they are pic-nicking.**

**All the fountains should be repainted early in the spring, I think that one coat of paint will be sufficient.**

**The two faced drinking taps, laid on the exhibition grounds were removed to St. Denis street opposite St. James church and the one that was there, was put in Wellington square.**

**Two show fountains should be put in Dominion square. One on the north side, where a large basin could be made similar, but larger, to the one in Victoria square and the high level pipe which now enters the square could be extended to it, where a fine display of water could be made. The six or eight jets of aforesaid fountain could be fed from the low level reservoir; leaving only the show jet to be fed from the high level reservoir; and one on the south without a large basin.**

**The fountain which is in Bellerive square, could be placed in Dufferin square, and a large one put in its place.**

**The Papineau square fountain could not be kept playing last summer on account of its defective bottom. The bottom should be concreted, and new revolving jets placed instead of the present spray jets.**

**The trough on St. Catherine street at Philips square should be removed, as it is now a nuisance to Mr. Morgan's new store. Six new troughs and drinking taps should be distributed in different parts of the city.**

**Three drinking taps made on the model of the one now in use opposite St. James' church on St. Denis street, should be distributed in different parts of the city.**

me to thank you in my name, also in the name of all the  
of the Water Department under my supervision, for  
able advice, and the impartial manner you treated us all —

Respectfully submitted,

Your obedient servant,

CHAS. LAGACE,

Foreman.

## ROCK GATES, AQUEDUCT, JANUARY 1892.

B. D. McCONNELL, Esq.,

*Superintendent Montreal Water Works.*

DEAR SIR,

The following is a statement of work done during year 1891. The fences along the line of Aqueduct were repaired, also the approaches to bridges; Peniston's bridge was renewed and painted. The crib work to all the bridges along the line was renewed, except Cross' bridge. Two new platforms were put on the bridge at "Rock Gates" for taking out stop logs. The castings and wood work on Inland cut bridge were painted. Many of the bridges were jacked up and straightened. Cross' bridge was planked. The flood gates at entrance to Inland cut were raised and lowered several times during the year, also the usual cutting of weeds was done. The spoil banks on south side of Inland cut were cut down, and a dry wall made at the foot of the slope, where required. The berm ditch was remade all along the same slope. Dunn's ditch was cleaned last fall. There was quite a lot of earth taken off the Aqueduct road opposite where spoil banks were cut down. There were also 52 pagées of picket fence made out of the old cap fence.

The whole respectfully submitted,

I have the honor to be,

Dear Sir,

Your devoted servant,

EDWARD SALLY,

*Guardian of Aqueduct.*





MONTHS

1891.

|                    | pumping. | Revolutions. | Gallons pumped. | in<br>air vessel. | In pounds. |        |         |        |         |
|--------------------|----------|--------------|-----------------|-------------------|------------|--------|---------|--------|---------|
|                    | Hrs. M.  |              |                 |                   |            |        |         |        |         |
| January .....      | 744.00   | 595601       | 138775033       | 78                | 139.50     | .....  | 186.00  | 26.00  | 79110   |
| February.....      | 667.00   | 520738       | 121331954       | 77                | 126.00     | .....  | 118.00  | 25.33  | 75770   |
| March.....         | 744.00   | 604150       | 140766950       | 78                | 139.50     | 30.00  | 153.00  | 26.00  | 75760   |
| April.....         | 679.30   | 611730       | 142533090       | 76                | 126.00     | ... .. | 129.00  | 23.75  | 69430   |
| May .....          | 380.00   | 339524       | 79109092        | 75                | 72.00      | .....  | 115.00  | 22.00  | 18470   |
| June .....         | 464.45   | 420136       | 97891688        | 75                | 99.00      | .....  | 102.00  | 26.50  |         |
| July .. ....       | 673.15   | 583724       | 136007692       | 75                | 128.25     | 43.00  | 118.00  | 25.80  |         |
| August.....        | 744.00   | 596586       | 139006004       | 76                | 139.50     | 48.00  | 124.00  | 29.38  |         |
| September .....    | 686.10   | 535835       | 124849555       | 75                | 130.50     | .....  | 118.00  | 31.00  |         |
| October.....       | 744.00   | 569001       | 132577233       | 76                | 139.50     | .....  | 145.00  | 26.37  | 18940   |
| November .....     | 711.45   | 534976       | 124649408       | 78                | 135.00     | .....  | 150.00  | 25.50  | 41010   |
| December .....     | 703.50   | 547033       | 127458689       | 77                | 137.25     | 40.00  | 155.00  | 24.00  | 76040   |
| Total.....         | 7942.15  | 6,459,036    | 1,504,955,388   | .....             | 1512.00    | 161.00 | 1613.00 | 311.63 | 454,530 |
| Average.....       |          |              | .. ..           | 76                |            |        |         |        |         |
| Last year (1890).. | 8293.25  | 6,657,807    | 1,551,260,031   | .....             | 1565.87    | 225.00 | 1832.00 | 305.68 | 602,680 |
| Average ..         |          |              | .....           | 76                |            |        |         |        |         |

No. 2.—SCHEDULE SHOWING THE WORK OF THE BREAST WHEEL No 2 AND TURBINES Nos. 3 AND 4.

| MONTHS<br>1891.  | TIME OF PUMPING  |         |          |          | REVOLUTIONS.    |           |            |               | Gallons<br>pumped. | Pressure in air vessel. | In pounds. |        |  | Cotton<br>waste. |
|------------------|------------------|---------|----------|----------|-----------------|-----------|------------|---------------|--------------------|-------------------------|------------|--------|--|------------------|
|                  | Breast<br>wheel. |         | Turbine. |          | Breast<br>wheel | Turbine.  |            |               |                    |                         |            |        |  |                  |
|                  | No. 2.           | Hrs. M. | No. 3.   | Hrs. M.  |                 | No. 2.    | No. 3.     | No. 4.        |                    |                         |            |        |  |                  |
|                  |                  |         |          |          |                 |           |            |               |                    |                         |            |        |  |                  |
| January.....     | .....            | .....   | 598.50   | 739.40   | .....           | 443745    | 904365     | 143449650     | 77                 | 130.50                  | 186.10     | 23.00  |  |                  |
| February.....    | .....            | .....   | 315.35   | 26.50    | .....           | 218675    | 29419      | 34893934      | 76                 | 56.25                   | 118.00     | 15.00  |  |                  |
| March .....      | 173.20           | .....   | 733.10   | 325.15   | 136653          | 566031    | 413752     | 139431904     | 76                 | 150.00                  | 153.00     | 25.00  |  |                  |
| April .....      | 718.45           | .....   | 715.20   | 715.20   | 585888          | 587836    | 986624     | 258560816     | 75                 | 270.00                  | 131.00     | 30.33  |  |                  |
| May .....        | 739.55           | .....   | 744.00   | 744.00   | 589416          | 630389    | 1135060    | 278146300     | 76                 | 279.00                  | 131.00     | 33.00  |  |                  |
| June .....       | 423.15           | .....   | 444.40   | 479.35   | 341379          | 369638    | 732242     | 168203328     | 75                 | 182.25                  | 102.00     | 24.88  |  |                  |
| July .....       | 668.10           | .....   | 670.05   | 673.15   | 529273          | 530683    | 966805     | 240018718     | 76                 | 251.25                  | 118.00     | 26.10  |  |                  |
| August.....      | 732.00           | .....   | 741.25   | 744.00   | 558901          | 557007    | 955161     | 247298674     | 76                 | 276.75                  | 124.00     | 29.50  |  |                  |
| September .....  | 586.00           | .....   | 494.35   | 685.35   | 501436          | 347721    | 854492     | 199161547     | 75                 | 249.75                  | 118.00     | 32.75  |  |                  |
| October.....     | 635.45           | .....   | 105.10   | 744.00   | 453495          | 71451     | 919811     | 156795754     | 74                 | 164.25                  | 145.00     | 27.60  |  |                  |
| November .....   | 139.35           | .....   | 685.00   | 720.00   | 99806           | 459903    | 844942     | 155501944     | 77                 | 164.25                  | 150.00     | 27.37  |  |                  |
| December.....    | 430.10           | .....   | 391.05   | 651.35   | 317168          | 272615    | 802828     | 156331092     | 75                 | 189.00                  | 149.00     | 23.70  |  |                  |
| Total.....       | 5246.55          | .....   | 6638.50  | 7249.05  | 4,113,418       | 5,055,691 | 9,545,501  | 2,177,793,662 | .....              | 2,366.25                | 1,625.00   | 318.23 |  |                  |
| Average.....     | .....            | .....   | .....    | .....    | .....           | .....     | .....      | .....         | 76                 | .....                   | .....      | .....  |  |                  |
| Last year (1890) | 6198.50          | .....   | 6,832.50 | 7,982.15 | 4,750,063       | 5,099,382 | 10,534,128 | 2,363,653,728 | .....              | 2,545.75                | 1,832.00   | 349.93 |  |                  |
|                  | .....            | .....   | .....    | .....    | .....           | .....     | .....      | .....         | 76                 | .....                   | .....      | .....  |  |                  |

| MONTHS<br>1891.       | Pumping<br>time. | Revolu-<br>tions. | Gallons<br>pumped. | Coal used in pounds.    |                                   |                | Pressure in air vessel | IN POUNDS.       |              |              |                  |        |
|-----------------------|------------------|-------------------|--------------------|-------------------------|-----------------------------------|----------------|------------------------|------------------|--------------|--------------|------------------|--------|
|                       | For<br>pumping   |                   |                    | For<br>banking<br>fire. | To raise<br>1,000,000<br>gallons. | Castor<br>oil. |                        | Cylinder<br>oil. | Seal<br>oil. | Coal<br>oil. | Cotton<br>waste. |        |
|                       | Hrs. M.          |                   |                    |                         |                                   |                |                        |                  |              |              |                  |        |
| January .....         | 295.45           | 242437            | 133340350          | 435790                  | 51730                             | 3656           | 77                     | 68.50            | 232.00       | 62.13        | 88.00            | 24.00  |
| February.....         | 318.45           | 245583            | 135070650          | 481910                  | 21940                             | 3730           | 74                     | 51.75            | 176.00       | 53.25        | 168.00           | 19.25  |
| March .....           | 232.35           | 197304            | 108517200          | 393320                  | 35320                             | 3949           | 75                     | 49.50            | 152.00       | 26.62        | 96.00            | 15.00  |
| April .....           | 31.45            | 23030             | 12666500           | 42790                   | 6220                              | 3869           | 75                     | 9.00             | 24.00        | .....        | .....            | .....  |
| May .....             | 162.40           | 138936            | 76414800           | 262160                  | 29880                             | 3822           | 75                     | 38.25            | 168.00       | 8.88         | 16.00            | 15.00  |
| June.....             | 298.15           | 236685            | 130176750          | 453170                  | 10280                             | 3560           | 75                     | 60.50            | 224.00       | 35.50        | 80.00            | 12.33  |
| July .....            | 211.10           | 181699            | 99934450           | 332010                  | 24870                             | 3572           | 74                     | 42.75            | 152.00       | 17.75        | 32.00            | 15.25  |
| August .....          | 230.10           | 193387            | 106362850          | 361260                  | 34000                             | 3716           | 75                     | 51.75            | 176.00       | 8.87         | 16.00            | 12.25  |
| September .....       | 296.45           | 262582            | 144420100          | 455320                  | 40720                             | 3435           | 75                     | 58.50            | 176.00       | 35.50        | 40.00            | 16.25  |
| October .....         | 339.00           | 302147            | 166180850          | 550110                  | 56450                             | 3652           | 75                     | 49.50            | 104.00       | 49.50        | 72.00            | 16.37  |
| November .....        | 325.45           | 275707            | 151638850          | 521350                  | 38180                             | 3690           | 73                     | 47.25            | 136.00       | 44.37        | 80.00            | 15.00  |
| December.....         | 211.50           | 170334            | 93683700           | 301130                  | 41570                             | 3658           | 75                     | 42.75            | 160.00       | 62.12        | 80.00            | 15.37  |
| Total .....           | 2,954.25         | 2469831           | 1,358,407,050      | 4,590,620               | 391,160                           | .....          | .....                  | 570.00           | 1,880.00     | 404.49       | 768.00           | 176.07 |
| Daily average...      | .....            | .....             | .....              | .....                   | .....                             | 3 692          | 75                     | .....            | .....        | .....        | .....            | .....  |
| Total last year ('90) | 2,535.35         | 2020259           | 1,111,142,450      | 3,572,280               | 287,960                           | .....          | .....                  | 652.66           | 1,977.00     | 328.12       | 704.00           | 138.00 |
| Daily average...      | .....            | .....             | .....              | .....                   | .....                             | 3,474          | 77                     | .....            | .....        | .....        | .....            | .....  |

No. 4—SCHEDULE SHOWING THE WORK OF STEAM ENGINE No. 1.

| MONTH            | Pumping time | Hrs. in | Revolutions | Gallons pumped | Coal used in pounds. |                     |                             | Average pressure on pump piston. | IN POUNDS.  |               |           |           |               |       |
|------------------|--------------|---------|-------------|----------------|----------------------|---------------------|-----------------------------|----------------------------------|-------------|---------------|-----------|-----------|---------------|-------|
|                  |              |         |             |                | For pumping          | For blanking fires. | To raise 1,000,000 gallons. |                                  | Caster oil. | Cylinder oil. | Seal oil. | Coal oil. | Cotton waste. |       |
|                  |              |         |             |                |                      |                     |                             |                                  |             |               |           |           |               |       |
| January          | 16 00        | 40740   | 3,228,748   | 20820          | .....                | 5900                | 75                          | 2.25                             | 8.00        | .....         | .....     | .....     | .....         | ..... |
| February         | 17 00        | 15546   | 5406,3176   | 279720         | 13650                | .....               | 4959                        | 75                               | 33.75       | 120.00        | 17.75     | 96.00     | 10.37         | ..... |
| March            | 67 00        | 44009   | 2136,7524   | 127780         | 9490                 | .....               | 6424                        | 75                               | 9.00        | 56.00         | 8.87      | 24.00     | 9.00          | ..... |
| April            | 19 20        | 13821   | 602,5956    | 33410          | 3760                 | .....               | 6166                        | 75                               | 2.25        | 16.00         | .....     | 8.00      | .....         | ..... |
| May              | 6 45         | 50874   | 2218,1064   | 110930         | 9300                 | .....               | 5412                        | 75                               | 41.25       | 40.00         | .....     | 16.00     | 8.00          | ..... |
| June             | 158 40       | 114300  | 4983,1800   | 253390         | 31150                | .....               | 5702                        | 75                               | 27.00       | 144.00        | 8.87      | 8.00      | 15.00         | ..... |
| July             | 25 40        | 17437   | 76025.82    | 34130          | 4220                 | .....               | 5044                        | 75                               | 4.50        | 32.00         | .....     | 8.00      | .....         | ..... |
| August           | 13 55        | 10764   | 4518,704    | 23510          | 4160                 | .....               | 6123                        | 75                               | 4.50        | 24.00         | .....     | .....     | 8.00          | ..... |
| September        | 36 25        | 21699   | 9400,764    | 48130          | 5470                 | .....               | 5665                        | 75                               | 6.75        | 24.00         | 8.88      | 8.00      | 10.38         | ..... |
| October          | .....        | .....   | .....       | .....          | .....                | .....               | .....                       | .....                            | .....       | .....         | .....     | .....     | .....         | ..... |
| November         | 35 55        | 23818   | 10384,648   | 58080          | 12060                | .....               | 6754                        | 75                               | 4.50        | 24.00         | 8.87      | 8.00      | .....         | ..... |
| December         | 55 50        | 41859   | 18250,524   | 92260          | 9230                 | .....               | 5562                        | 75                               | 4.50        | 24.00         | 8.87      | 16.00     | .....         | ..... |
| Total            | 660.30       | 486,737 | 212,218,646 | 1081,660       | 102,490              | .....               | .....                       | .....                            | 110.25      | 512.00        | 62.11     | 192.00    | 60.75         | ..... |
| Average          | .....        | .....   | .....       | .....          | .....                | .....               | .....                       | 75                               | .....       | .....         | .....     | .....     | .....         | ..... |
| Last year (1890) | 773.55       | 527,132 | 229,829,552 | 1122,980       | 133,210              | .....               | .....                       | .....                            | 128.16      | 1,032.00      | 67.74     | 109.00    | 110.00        | ..... |
| Average          | .....        | .....   | .....       | .....          | .....                | .....               | 6,480                       | 75                               | .....       | .....         | .....     | .....     | .....         | ..... |

| No. 2--SCHEDULE--MONTREAL WATER WORKS, 1901. |                 |              |              |              |                 |               |               |                       |                             |
|--|-----------------|--------------|--------------|--------------|-----------------|---------------|---------------|-----------------------|-----------------------------|
| MONTHS.                                      | BY WATER POWER. |              |              |              | BY STEAM POWER. |               |               | TOTAL JOB EACH MONTH. |                             |
|  | Wheel No. 1.    | Wheel No. 2. | Wheel No. 3. | Wheel No. 4. | Engine No. 1.   | Engine No. 2. | By Water.     | By Steam.             | By Water and by Steam.      |
|  |                 |              |              |              |                 |               |               |                       |                             |
| January.....                                 | 126778088       | .....        | 65674560     | 77778396     | 183240800       | 2428648       | 228224678     | 128868366             | 4190858167.3432.6838.78     |
| February....                                 | 121331954       | .....        | 33838900     | 9050044      | 185070460       | 60063176      | 156225866     | 194133896             | 360308714.44.69.60.41.88.01 |
| March .....                                  | 140786260       | 30284644     | 58424538     | 35682672     | 108517900       | 31267024      | 280198364     | 123685194             | 410083978.68.85.81.65.89.01 |
| April.....                                   | 142533080       | 68711224     | 88690738     | 84942644     | 129685200       | 6023066       | 401083606     | 18692426              | 419786362.96.65.4.45.40.82  |
| May.....                                     | 79109092        | 67283688     | 92827672     | 97815180     | 76414800        | 92181064      | 367253362     | 98695864              | 465851256.78.87.21.63.41.10 |
| June.....                                    | 97801688        | 56644092     | 64706424     | 62072812     | 130176760       | 48684800      | 246095016     | 180011650             | 446108566.60.65.40.35.29.29 |
| July .....                                   | 139076392       | 78322404     | 78541064     | 28145639     | 99984460        | 7602832       | 37028410      | 107836982             | 45850352.77.76.22.24.28.56  |
| August .....                                 | 139006004       | 82717792     | 82487036     | 82148846     | 106362360       | 4518704       | 366308678     | 110887654             | 49718582.77.60.22.31.38.89  |
| September..                                  | 124849356       | 74212588     | 61422708     | 78466312     | 144480100       | 9460784       | 384011108     | 163880864             | 477891967.07.78.59.32.27.79 |
| October....                                  | 122677328       | 67117960     | 10574748     | 79106746     | 166180860       | Not work'g    | 289373867     | 166180860             | 465653857.63.62.56.48.37.23 |
| November....                                 | 124649408       | 14771288     | 66065644     | 79680012     | 161639860       | 10834648      | 280161162     | 169025468             | 442174820.63.35.36.65.37.06 |
| December...                                  | 127458880       | 46940864     | 40317020     | 69048208     | 93688700        | 16950624      | 283780791     | 111834224             | 386784006.71.79.28.38.37.76 |
| Total.....                                   | 1,804,865,888   | 608,785,664  | 748,084,712  | 800,813,86   | 1,358,407,060   | 212,918,040   | 3,682,749,080 | 1,870,825,840         | 5,553,574,920               |
| Daily average 366 days.                      | 4,125,186       | 1,667,006    | 2,049,674    | 2,249,076    | 3,711,063       | 581,421       | 10,086,793    | 6,508,064             | 14,594,857                  |
| Total 1890....                               | 1,531,800,081   | 708,000,324  | 754,708,536  | 805,895,846  | 1,111,142,400   | 229,874,502   | 3,914,822,768 | 1,340,872,002         | 5,255,694,770               |
| Daily average                                | 4,180,000       | 1,925,000    | 2,067,000    | 2,249,000    | 3,044,200       | 629,670       | 10,725,816    | 3,672,886             | 14,398,702                  |
|  |                 |              |              |              |                 |               |               |                       |                             |

MONTHS.

TOTAL JOB EACH MONTH.

BY STEAM POWER.

BY WATER POWER.

Person-  
tuge.

Average  
Level of  
Water.

No. 6.—SCHEDULE SHOWING THE WORK OF ENGINE No. 1. (WORTHINGTON) AT THE HIGH LEVEL PUMPING STATION.

| MONTHS<br>1891.     | Pumping<br>time. | Revolu-<br>tions. | Gallons<br>pumped. | Coal used in pounds. |                          |                                   | Average pressure in<br>pump piston. | Castor<br>oil. | Valvo-<br>line. | Cotton<br>waste. |
|---------------------|------------------|-------------------|--------------------|----------------------|--------------------------|-----------------------------------|-------------------------------------|----------------|-----------------|------------------|
|                     | Hrs. M.          |                   |                    | For<br>pumping       | For<br>banking<br>fires. | To raise<br>1,000,000<br>gallons. |                                     |                |                 |                  |
|                     |                  |                   |                    |                      |                          |                                   |                                     |                |                 |                  |
| January.....        | .....            | .....             | .....              | .....                | .....                    | .....                             | .....                               | .....          | .....           | .....            |
| February.....       | .....            | .....             | .....              | .....                | .....                    | .....                             | .....                               | .....          | .....           | .....            |
| March .....         | .....            | .....             | .....              | .....                | .....                    | .....                             | .....                               | .....          | .....           | .....            |
| April .....         | .....            | .....             | .....              | .....                | .....                    | .....                             | .....                               | .....          | .....           | .....            |
| May .....           | .....            | .....             | .....              | .....                | .....                    | .....                             | .....                               | .....          | .....           | .....            |
| June.....           | 19.00            | 28354             | 340248             | 4033                 | .....                    | 11855                             | 100                                 | .....          | .....           | .....            |
| July .....          | .....            | .....             | .....              | .....                | .....                    | .....                             | .....                               | .....          | .....           | .....            |
| August.....         | .....            | .....             | .....              | .....                | .....                    | .....                             | .....                               | .....          | .....           | .....            |
| September .....     | .....            | .....             | .....              | .....                | .....                    | .....                             | .....                               | .....          | .....           | .....            |
| October .....       | .....            | .....             | .....              | .....                | .....                    | .....                             | .....                               | .....          | .....           | .....            |
| November.....       | .....            | .....             | .....              | .....                | .....                    | .....                             | .....                               | .....          | .....           | .....            |
| December.....       | .....            | .....             | .....              | .....                | .....                    | .....                             | .....                               | .....          | .....           | .....            |
| Total .....         | 19.00            | 28,354            | 340,248            | 4,033                | .....                    | .....                             | .....                               | .....          | .....           | .....            |
| Average.....        | .....            | .....             | .....              | .....                | .....                    | 11,855                            | 100                                 | .....          | .....           | .....            |
| Last year (1890)... | 204.00           | 274,434           | 3,293,208          | 40,874               | 5,237                    | .....                             | .....                               | 8.00           | 99.00           | 26.00            |
| Average.....        | .....            | .....             | .....              | .....                | .....                    | 14,001                            | 100                                 | .....          | .....           | .....            |

| MONTHS<br>1891.   | time.    | Revolu-<br>tions. | Revolutions<br>minute. | Gallons<br>pumped. | Pressure in air | coal used in pounds. |                          |                                   |                 | oil.     | waste. |
|-------------------|----------|-------------------|------------------------|--------------------|-----------------|----------------------|--------------------------|-----------------------------------|-----------------|----------|--------|
|                   | Hrs. M.  |                   |                        |                    |                 | For<br>pumping       | For<br>banking<br>fires. | To raise<br>1,000,000<br>gallons. | For<br>heating. |          |        |
| January.....      | 135.30   | 324553            | 39.9                   | 15578544           | 100             | 47299                | 12400                    | 3832                              | 2515            | 112 50   | 30.00  |
| February... ..    | 117.40   | 270739            | 38.3                   | 12995472           | 100             | 42020                | 11400                    | 4110                              | .....           | 103.50   | 30.00  |
| March.....        | 134.45   | 308149            | .....                  | 14837685           | 100             | 45666                | 12600                    | 3927                              | 480             | 105.00   | 30.00  |
| April.....        | 129.00   | 299927            | .....                  | 14441784           | 100             | 42936                | 12200                    | 3819                              | .....           | 82.00    | 25.00  |
| May.....          | 153.55   | 350146            | .....                  | 16859881           | 100             | 50684                | 12400                    | 3741                              | .....           | 127 50   | 25.00  |
| June.. ..         | 170.00   | 375148            | .....                  | 18063752           | 100             | 58570                | 14600                    | 3914                              | .....           | 132 50   | 25.00  |
| July.....         | 162.30   | 382560            | .....                  | 18400545           | 105             | 58965                | 14200                    | 3975                              | .....           | 139.00   | 25.00  |
| August .....      | 164.45   | 393098            | 39.7                   | 18928063           | 105             | 63992                | 13400                    | 4088                              | .....           | 139.00   | 25.00  |
| September .....   | 194.00   | 463029            | .....                  | 22295304           | 105             | 73080                | 12400                    | 3966                              | .....           | 161.00   | 25.00  |
| October .....     | 161.00   | 371590            | 38.4                   | 17892426           | 108             | 66844                | 13400                    | 4485                              | .....           | 141.00   | 30.00  |
| November.....     | 152.30   | 338157            | .....                  | 16282595           | 108             | 60278                | 12200                    | 4452                              | 427             | 119.00   | 30.00  |
| December .....    | 167.00   | 360993            | .....                  | 17382174           | 108             | 74373                | 12600                    | 4647                              | 1175            | 137.00   | 25.00  |
| Total.....        | 1,842.35 | 4,238,089         | .....                  | 203,958,225        | .....           | 684,707              | 153,800                  | .....                             | 4,597           | 1,499.00 | 325.00 |
| Average...        | .....    | .....             | .....                  | .....              | 103             | .....                | .....                    | 4110                              | .....           | .....    | .....  |
| Last year (1890). | 1,706.30 | 3,804,127         | .....                  | 182,597,826        | .....           | 587,399              | 131,400                  | .....                             | 9,437           | 1,682.50 | 462.00 |
| Average .....     | .....    | .....             | .....                  | .....              | 109             | .....                | .....                    | 3936                              | .....           | .....    | .....  |

# WATER CONCENTRATION AT THE HIGH LEVEL PUMPING STATION.

THE WATER PUMPING STATION  
 WATER CONCENTRATION AT THE HIGH LEVEL PUMPING STATION

| Date     | Time  | Water Temp. | Air Temp. | Average Temperature |
|----------|-------|-------------|-----------|---------------------|
|          |       |             |           |                     |
| 10/1/00  | 10:00 | 20.0        | 10.0      | 15.0                |
| 10/2/00  | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/3/00  | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/4/00  | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/5/00  | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/6/00  | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/7/00  | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/8/00  | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/9/00  | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/10/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/11/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/12/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/13/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/14/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/15/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/16/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/17/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/18/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/19/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/20/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/21/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/22/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/23/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/24/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/25/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/26/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/27/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/28/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/29/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/30/00 | 10:00 | 18.0        | 10.0      | 14.0                |
| 10/31/00 | 10:00 | 18.0        | 10.0      | 14.0                |



**DULE No. 9.—REPAIRS TO MAINS, HYDRANTS AND VALVES  
DURING THE YEAR 1891.**

| Description        | 24" | 16" | 12" | 10" | 8" | 6" | 4" | Hydrant<br>valves<br>renewed. | Hydrant<br>rods<br>broken. |
|--------------------|-----|-----|-----|-----|----|----|----|-------------------------------|----------------------------|
| es broken.....     | 1   | 0   | 2   | 1   | 1  | 10 | 25 |                               |                            |
| own out.....       | 4   | 1   | 16  | 8   | 6  | 26 | 34 |                               |                            |
| ves renewed.....   | 0   | 0   | 0   | 0   | 0  | 0  | 0  |                               |                            |
| ndles renewed..... | 0   | 0   | 0   | 0   | 0  | 4  | 9  | 175                           | 17                         |

**REPAIRS &c. TO SERVICES.**

| Couplings<br>leaking. | Burst<br>in wall. | Ground<br>cocks<br>renewed | Wooden<br>boxes re-<br>placed by<br>iron ones. | Wooden<br>boxes<br>renewed<br>where<br>new foot-<br>path laid. | Services<br>choked. | Old kind<br>cocks re-<br>placed by<br>pneumatic<br>valves. |
|-----------------------|-------------------|----------------------------|--|--|---------------------|--|
| 64                    | 58                | 156                        | 540  | 1473   | 86                  | 204  |

| from<br>cellar<br>de on<br>t. | Frozen<br>outside. | Frozen<br>inside. | Frozen<br>in wall. | False<br>reports<br>investi-<br>gated. | Leak on services<br>from various causes<br>undefined. |
|-------------------------------|--------------------|-------------------|--------------------|--|---|
|                               | 1                  | 150               | 51                 | 46                                     | 1057  |

|  |        |
|--|--------|
| lants ( 5 noz.) put in during year 1891 .....                  | 187    |
| ent hydrants in position up to January 1892 (3 noz.) .....     | 70     |
| ent hydrants in position up to January 1891 (2 noz.).....      | 530    |
| ent hydrants (2 noz ) put in during year 1891 (new work) ..... | 35     |
| ent hydrants in position up to January 1892 (5 noz.).....      | 441    |
| tic valves put in during year 1891 (new work) .....            | 2,366  |
| tic valves put in up to January 1892 (new work and repairs)... | 15,536 |

**ANTS FROZEN DURING YEAR COMMENCING JANUARY 1891,  
ENDING DECEMBER 1891.**

| y. | February. | March. | December. | Total hydrants frozen. |
|----|-----------|--------|-----------|------------------------|
|    | 719       | 462    | 79        | 2089 times.            |

b shops, included in this report.

# 24 16—Showing the Expenses Incurred in Making Pipes, Hydrants and Valves during Year 1891.

| PLACES                         | DATE | QUANTITY | HOW REPAIRED.               | Probable Cause of Injury       |
|--------------------------------|------|----------|-----------------------------|--------------------------------|
| St. Cath. cor. City Councilors | Jan  | 1        | Put new valve               | Old one worn out.              |
| St. Cath. cor. City Councilors | "    | 1        | Recaulked joint             | Joint of hydr. blown out       |
| St. Cath. cor. City Councilors | "    | 1        | Replaced by another hydrant | Rough usage.                   |
| St. Cath. cor. City Councilors | "    | 1        | Put new rod and valve       | "                              |
| St. Cath. cor. City Councilors | "    | 1        | Put on bonnet               | Bonnet blown off (No stay)     |
| St. Cath. cor. City Councilors | "    | 1        | Put in a new piece          | Main broken across             |
| St. Cath. cor. City Councilors | "    | 1        | Replaced rod and valve      | 20" main resting on it         |
| St. Cath. cor. City Councilors | "    | 1        | Put in a new piece          | Broken by frost                |
| St. Cath. cor. City Councilors | "    | 1        | Put in a new toe pipe       | Broken by intercepting sewer   |
| St. Cath. cor. City Councilors | "    | 1        | Took out old hydrant        | Shifting from heavy pressure.  |
| St. Cath. cor. City Councilors | "    | 1        | Put in new valve            | Not in use.                    |
| St. Cath. cor. City Councilors | "    | 1        | "                           | Old one worn out.              |
| St. Cath. cor. City Councilors | "    | 1        | Replaced rod and valve      | "                              |
| St. Cath. cor. City Councilors | "    | 1        | Put in a new piece          | Broken by frost.               |
| St. Cath. cor. City Councilors | "    | 1        | Recaulked joint             | Broken by settling of dr. cut. |
| St. Cath. cor. City Councilors | "    | 1        | Took out old hydrant        | Joint blown out.               |
| St. Cath. cor. City Councilors | "    | 1        | Put in new hydrant          | Not in use.                    |
| St. Cath. cor. City Councilors | "    | 1        | Replaced rod                | Broken by rough usage.         |
| St. Cath. cor. City Councilors | "    | 1        | Put in a new piece          | Rod unsheathed rough usage.    |
| St. Cath. cor. City Councilors | "    | 1        | "                           | Broken by settling of dr. cut. |
| St. Cath. cor. City Councilors | "    | 1        | Put in new valve            | "                              |
| St. Cath. cor. City Councilors | "    | 1        | "                           | Value worn out.                |
| St. Cath. cor. City Councilors | "    | 1        | "                           | "                              |
| St. Cath. cor. City Councilors | "    | 1        | "                           | Band hole in brass.            |
| St. Cath. cor. City Councilors | "    | 1        | "                           | Washer worn out.               |
| St. Cath. cor. City Councilors | "    | 1        | "                           | Valve worn out.                |
| St. Cath. cor. City Councilors | "    | 1        | Repacked valve              | Packing worn out.              |
| St. Cath. cor. City Councilors | "    | 1        | "                           | "                              |

**Mansfield at Dorchester**  
**Mountain and Sherbrooke**

| Jan.  | 29 1/4" Main. | Put in new piece      | Cause unknown.               |
|-------|---------------|-----------------------|------------------------------|
| "     | " 12"         | Old spindle taken out | Unused valve.                |
| Feb.  | 1             | Put in new brass      | Sand hole in brass.          |
| "     | 2             | " " valve             | Valve worn out.              |
| "     | 2             | " " "                 | " "                          |
| "     | 3             | " " "                 | " "                          |
| "     | 4 1"          | Put in a new piece    | Cause unknown.               |
| "     | 4             | Reshipped rod         | Rough usage.                 |
| "     | 5 12"         | Put in a new piece    | Defective pipe.              |
| "     | 5 6"          | Recaulked joints      | Joints blown out.            |
| "     | 6 6"          | Put in a new piece    | Settling of intercepting sew |
| "     | 7             | " " valve             | Valve worn out.              |
| "     | 8             | " " "                 | " "                          |
| "     | 9             | " " "                 | " "                          |
| "     | 10            | " " "                 | " "                          |
| "     | 11 4"         | Put in new piece      | Old age.                     |
| "     | 12 10"        | Repacked valve        | Packing valve.               |
| "     | 13            | Put new valve         | Valve worn out.              |
| "     | 14            | " " "                 | " "                          |
| "     | 15            | " " "                 | " "                          |
| "     | 16 6"         | Put in new piece      | Old age.                     |
| "     | 17            | " " valve             | Valve worn out.              |
| "     | 19 4"         | " " piece             | Settling of drain cut.       |
| "     | 20            | " " valve             | Valve cut by stone.          |
| "     | 21            | " " "                 | Valve worn out.              |
| "     | 22            | " " "                 | " "                          |
| "     | 24            | " " "                 | " "                          |
| "     | 25            | " " "                 | " "                          |
| "     | 26 6"         | Recaulked joint       | Joint blown out.             |
| "     | 26            | Put in new valve      | Valve worn out.              |
| March | 3             | " " "                 | " "                          |
| "     | 4             | " " "                 | Not properly clean when m'de |
| "     | 5             | " " washer            | Bad washer.                  |
| "     | 6             | " " valve             | Valve worn out.              |
| "     | 7             | " " "                 | " "                          |

No. 10—Schedule showing the Repairs done to Main Pipes, Hydrants and Valves during year 1891.

| POSITION.                       | DATE  | Diameter | Valves | Hydrants | HOW REPAIRED.           | Probable cause of injury      |
|---------------------------------|-------|----------|--------|----------|-------------------------|-------------------------------|
| Pine at Peel to Côte des Neiges | March | 12"      | 1      | 1        | Renewing valve chambers | New level.                    |
| Sherbrooke and University       | "     | "        | "      | "        | Put in new valve        | Valve worn out.               |
| St Catherine and Peel           | "     | "        | "      | "        | "                       | "                             |
| Pine Ave and Cotton Road        | "     | "        | "      | "        | "                       | "                             |
| Opp 126 Murray                  | "     | "        | "      | "        | "                       | "                             |
| Avenue de la Loi Dorchester     | "     | 4"       | "      | "        | "                       | "                             |
| St James and St. Martin         | "     | "        | "      | "        | piece                   | Hole in pipe (old age).       |
| Argyle Avenue                   | "     | "        | "      | "        | valve                   | Valve worn out.               |
| Sherbrooke and St. Chas. Borr.  | "     | "        | "      | "        | "                       | "                             |
| Pine Ave cor Peel               | "     | "        | "      | "        | "                       | "                             |
| " and Redpath                   | "     | "        | "      | "        | Raising valve chambers  | New level.                    |
| St. Antoine and Cathedral       | "     | "        | "      | "        | "                       | "                             |
| Sherbrooke and Hutchison        | "     | "        | "      | "        | Put new valve           | Valve worn out.               |
| Pine Av. and Mance              | "     | "        | "      | "        | "                       | "                             |
| Napoléon and Knox               | "     | "        | "      | "        | "                       | "                             |
| St. Antoine and Seigneurs       | "     | "        | "      | "        | Bonnetted end of pipe   | Bonnet blown off.             |
| Atwater and St. Catherine       | "     | "        | "      | "        | Recaulked joint         | Pipe shifted heavy pressure.  |
| Burns and University            | "     | "        | "      | "        | Put in new valve        | Valve worn out.               |
| Victoria at Burnside            | "     | "        | "      | "        | "                       | "                             |
| Banguinnet and Roy              | "     | "        | "      | "        | Reshipped rod           | Rough usage.                  |
| Volteurs and Craig              | "     | "        | "      | "        | Recaulked joint         | Joint blown out.              |
| Cadieux and St. Jean-Bte.       | April | "        | "      | "        | Put new valve           | Valve worn out.               |
| Lawrence and Guitbault          | "     | "        | "      | "        | Rejected valve          | Packing worn out.             |
| St. Lawrence and Port           | "     | "        | "      | "        | Recaulked joint         | Joint blown out.              |
| St. Lawrence and Bleury         | "     | "        | "      | "        | Put in new piece        | Settling of intercepting sew. |
| St. Lawrence and Bleury         | "     | "        | "      | "        | "                       | Valve worn out.               |
| amount at Montreal Dist.        | "     | "        | "      | "        | "                       | "                             |

|                                    |       |    |       |       |                                |                      |
|------------------------------------|-------|----|-------|-------|--------------------------------|----------------------|
| Running below St. Antoine.....     | April | 7  | ..... | ..... | Put in new valve.....          | Valve worn out.      |
| Richmond Sq.....                   | "     | 8  | ..... | ..... | " " "                          | " "                  |
| Ontario and Montcalm.....          | "     | 8  | 6"    | ..... | Repacked valve.....            | Packing worn out.    |
| Stampon and Sherbrooke.....        | "     | 9  | 4"    | ..... | Put n w spindle.....           | Spindle worn out.    |
| Sherbrooke and M tcalfe.....       | "     | 9  | 6"    | ..... | Repacked valve.....            | Valve packing worn   |
| St. Catherine and Atwater Av....   | "     | 10 | 12"   | ..... | Recalked joint.....            | B'own out: pipe s    |
| St. Catherine and Phillip Sq.....  | "     | 11 | 6"    | ..... | Put in a new piece.....        | Setting of interc, p |
| St. Antoine and Richmond Sq....    | "     | 12 | 12    | ..... | " " valve.....                 | Old valve worn ou    |
| Chatham and St. Antoine.....       | "     | 13 | 10"   | ..... | " " "                          | " "                  |
| Opp. No. 110 Colborne st.....      | "     | 13 | 4"    | ..... | Recalked joint.....            | Joint blown out.     |
| Busby and Craig.....               | "     | 14 | 4"    | ..... | Repacked valve.....            | Valve worn out.      |
| Albert and St. Félix.....          | "     | 14 | 6"    | ..... | Recalked Joint.....            | Joint blown out.     |
| University opp. 509.....           | "     | 15 | 12"   | ..... | " " "                          | " "                  |
| Guy in Bulmers Yard.....           | "     | 16 | ..... | ..... | Put in new valve.....          | Valve worn out.      |
| Notre Dame and Place d'Armes..     | "     | 17 | 6"    | ..... | " " piece.....                 | Pipe shifted.        |
| St. James and Windsor.....         | "     | 18 | 24"   | ..... | Run a new joint.....           | Joint too small.     |
| Inspector and St. James.....       | "     | 19 | 12"   | ..... | Took a piece of wood from..... | Under gate of valv   |
| Pine Ave. and Simpson.....         | "     | 21 | 12"   | ..... | Lower d main.....              | Too high for new l   |
| Lagauchetière and Mansfield.....   | "     | 22 | ..... | ..... | Rebuilt hydr. Chamber.....     | Chamber fell in.     |
| Mignonne and Panet.....            | "     | 23 | 6"    | ..... | Put in new valve.....          | Valve worn out.      |
| Water st. at Tob. fact.....        | "     | 24 | 4"    | ..... | " " "                          | " "                  |
| Fu'ford and Delisle.....           | "     | 25 | 12"   | ..... | Recalked joint.....            | Cause unknown.       |
| Harbour in Gas. Co's yd.....       | "     | 26 | ..... | ..... | Put new valve.....             | Broken; rough us     |
| Opp. No. 409 Aqueeduct.....        | "     | 26 | 4"    | ..... | Recalked joint.....            | Joint blown out.     |
| Lusignan and No're-Dame.....       | "     | 27 | 4"    | ..... | Repacked valve.....            | Packing worn out.    |
| Park Av. at Sherbrooke.....        | "     | 27 | ..... | ..... | Rebuilt hydrant chamber.....   | Chamber fell in.     |
| Foundling and McGill.....          | "     | 28 | ..... | ..... | Put new cover.....             | Stone worn out.      |
| Amherst and Sherbrooke.....        | "     | 28 | ..... | ..... | " " "                          | " "                  |
| No. 112 Maisonneuve.....           | "     | 29 | 6"    | ..... | Recalked joint.....            | Joint blown out.     |
| Marlborough.....                   | "     | 29 | 4"    | ..... | Put in new piece.....          | Defective pipe.      |
| St. Peter opp. St. Ann's Market... | "     | 30 | 10"   | ..... | Recalked joint.....            | Joint blown out.     |
| St. Alexander and Bernard.....     | "     | 30 | ..... | ..... | Put in valve.....              | Valve worn out.      |
| MacKay st. at Dorchester.....      | "     | 30 | ..... | ..... | Straightened rod.....          | Ice und. Val. bent b |
| Bonsecours N S. Notre-Dame....     | May   | 16 | ..... | ..... | Repacked valve.....            | Packing worn out.    |
| Opp. No. 373 Jacques-Cartier.....  | "     | 24 | ..... | ..... | Put in a new piece.....        | Defective pipe.      |



|                                    |      |        |   |                                 |                     |
|------------------------------------|------|--------|---|---------------------------------|---------------------|
| St. Patrick and Atwater av.....    | May  | 26/24" | 1 | Put stone cover.....            | Wood one rotten.    |
| Fortification Lane.....            | "    | 26/8"  | 1 | Recaulked joint.....            | Joint blown out.    |
| St. Jean-Bte and Cadieux.....      | "    | 27     | 1 | Repaired hydrant rod.....       | through usage.      |
| St. Lawrence and Mary Ann.....     | "    | 27     | 1 | Put in new valve.....           | Valve worn out.     |
| Guy at Dorchester.....             | "    | 28     | 1 | " " ".....                      | " " "               |
| Forfar street.....                 | "    | 28     | 1 | " " ".....                      | " " "               |
| Notre-Dame and Dez-ry.....         | "    | 29     | 1 | " " ".....                      | " " "               |
| Napoléon and Knox.....             | "    | 29     | 1 | " " ".....                      | " " "               |
| St. Lawrence and Vitre.....        | "    | 30     | 1 | " " ".....                      | " " "               |
| William and Dalhousie.....         | "    | 30 12" | 1 | " " " length.....               | Settling of sewer c |
| St. Catherine E. of Dezery.....    | "    | 31     | 1 | Raised hydrant.....             | Hydrant too low.    |
| Vallee and St. George.....         | "    | 31 1"  | 1 | Rebuilding valve chamber.....   | Chamber fell in.    |
| Ontario and Visitation.....        | June | 1 12"  | 1 | Recaulked joint.....            | Joint blown out.    |
| St. Mark and Bayle.....            | "    | 1      | 1 | Put drain to hydrant.....       | Had no drain.       |
| Chaboillez Square.....             | "    | 2 10"  | 1 | Recaulked joint.....            | New drain cut.      |
| DeLery street.....                 | "    | 2      | 1 | Planked over meter chamber..... |                     |
| Visitation and Craig.....          | "    | 3 6"   | 1 | Put in new spindle.....         | Spindle broken.     |
| St. Mathew opp. Bayle.....         | "    | 3      | 1 | " " " valve.....                | Valve worn out.     |
| Lagauchetière and Bleury.....      | "    | 4      | 1 | " " ".....                      | " " "               |
| Vallee and St. George.....         | "    | 4      | 1 | " " ".....                      | " " "               |
| St. Dizier and DeBresoles.....     | "    | 5      | 1 | " " ".....                      | " " "               |
| Notre-Dame and Murray.....         | "    | 5      | 1 | " " ".....                      | " " "               |
| Craig opp. St. François-Xavier.... | "    | 6      | 1 | " " ".....                      | " " "               |
| Opp. No. 128 Murray.....           | "    | 7 4"   | 1 | Renewed valve.....              | Old one no good.    |
| St. Monique below Dorchester....   | "    | 8 4"   | 1 | Put in a new piece.....         | Old age.            |
| Dorchester W. of Fort.....         | "    | 9 12"  | 1 | " " ".....                      | Settling of drain c |
| St. Catherine W. of Metcalfe.....  | "    | 10 12" | 1 | Put new stone cover.....        | Old one worn out.   |
| St. James W. of Cathedral.....     | "    | 11 12" | 1 | Recaulked joint.....            | Joint blown out.    |
| Windsor and Dorchester.....        | "    | 12 12" | 1 | " " ".....                      | Pipe shifted.       |
| St. Augustin street.....           | "    | 12     | 1 | Put in new valve.....           | Valve worn out.     |
| Opp. No. 322 Bourgeois.....        | "    | 13     | 1 | " " ".....                      | " " "               |
| St. Patrick and St. Etienne.....   | "    | 13     | 1 | " " ".....                      | " " "               |
| St. Catherine and St. Elizabeth... | "    | 14 6"  | 1 | " " " piece.....                | Settling of sewer c |
| St. Denis and St. Julie.....       | "    | 14     | 1 | " " " valve.....                | Valve worn out.     |
| Cursol st.....                     | "    | 15     | 1 | " " ".....                      | " " "               |

| Address                         | Valve          | Valve with out |
|---------------------------------|----------------|----------------|
| St. James and Aque              | Valve with out | Valve with out |
| Park av. cor. Picav             | Valve with out | Valve with out |
| Windsor and Dorchester          | Valve with out | Valve with out |
| St. Genevieve and St. Antoine   | Valve with out | Valve with out |
| St. Famille and Prince-Arthur   | Valve with out | Valve with out |
| Aqueduct and Notre-Dame         | Valve with out | Valve with out |
| St. Catherine and Mountain      | Valve with out | Valve with out |
| Queen and William               | Valve with out | Valve with out |
| Ann St. opp. No. 30             | Valve with out | Valve with out |
| St. Catherine and Beaudry       | Valve with out | Valve with out |
| St. Catherine opp. St. Alphonse | Valve with out | Valve with out |
| St. Catherine and Beaudry       | Valve with out | Valve with out |
| Ann St. opp. No. 30             | Valve with out | Valve with out |
| Queen and William               | Valve with out | Valve with out |
| St. Catherine and Mountain      | Valve with out | Valve with out |
| Aqueduct and Notre-Dame         | Valve with out | Valve with out |
| St. Famille and Prince-Arthur   | Valve with out | Valve with out |
| St. Genevieve and St. Antoine   | Valve with out | Valve with out |
| Windsor and Dorchester          | Valve with out | Valve with out |
| Park av. cor. Picav             | Valve with out | Valve with out |
| St. James and Aque              | Valve with out | Valve with out |



|  |      |    |                                     |                        |
|--|------|----|-------------------------------------|------------------------|
| Wellington and Dalhousie.....            | "    | "  | Reducing sludge in hydrant.....     | Sludge hole            |
| St. Sulpicio and Debresoles.....         | "    | 26 | Put in new valve.....               | Valve worn out.        |
| Pin <sup>o</sup> Av. and Mance.....      | "    | 27 | Recaulked joint.....                | Hydrant joint blown    |
| St. Antoine opp. Inspector.....          | "    | 28 | Put in new valve.....               | Valve worn out.        |
| Hunter street.....                       | "    | 29 | Put in new hydrant.....             | Defective casting.     |
| St. Lawrence and Ontario.....            | "    | "  | Repacked valve.....                 | Packing worn out.      |
| College and McGill.....                  | "    | 30 | Rebuilt valve chamber.....          | Chamber fell in.       |
| Windsor and St. Antoine.....             | "    | 31 | Put iron frame.....                 | Paving.                |
| Wolfe and Robin.....                     | July | 1  | Put in new valve.....               | Valve worn out.        |
| McGill and College.....                  | "    | "  | Put in new rod.....                 | Rough usage.           |
| Ontario and Jac.-Cartier.....            | "    | "  | Took away hydrant.....              | Hydrant abandoned.     |
| " and P. essis.....                      | "    | "  | " ".....                            | " "                    |
| " and St. Christophe.....                | "    | "  | " ".....                            | " "                    |
| St. Lawrence and Dorchester.....         | "    | "  | " ".....                            | " "                    |
| Ontario and Panet.....                   | "    | "  | Connecting drain to hydrant.....    | Was not connected.     |
| Sherbrooke last West.....                | "    | "  | Recaulked joint.....                | Joint of hydrant blo   |
| St. Catherine and Dezery..               | "    | "  | Put in new spindle.....             | Spindle worn out.      |
| St. André ab. Ontario.....               | "    | "  | Valve renewed.....                  | Valve worn out.        |
| Manufacturer and Rop <sup>ry</sup> ..... | "    | 3  | Put in new valve.....               | " "                    |
| St. James and Dominion.....              | "    | "  | " ".....                            | " "                    |
| Latour st. 2nd.....                      | "    | "  | " ".....                            | " "                    |
| Phillip Square.....                      | "    | 4  | Renewed valve chamber.....          | Fell in                |
| St. Catherine and Mance.....             | "    | "  | Took out hydrant.....               | Not used.              |
| St. Maurice and McGill.....              | "    | "  | Rebuilt valve chamber.....          | Chamber fell in.       |
| Harbour and No're-Dame.....              | "    | 5  | Raised valve stone.....             | To level.              |
| St. Catherine and Sanguinet.....         | "    | "  | Put in new piece.....               | Settling of sewer cut. |
| St. Louis and Bonsecours.....            | "    | "  | Raised valve chamber.....           | To level.              |
| St. Catherine at Grey Nunery.....        | "    | "  | Repacked valve.....                 | Valve worn out.        |
| St. Catherine and Deloimier av..         | "    | 6  | Put in new valve stone.....         | Stone worn out.        |
| Papineau and Notre-Dam.....              | "    | "  | Raised valve stone.....             | To level.              |
| University opp. McGill College...        | "    | "  | Took out 4" valve.....              | Not used.              |
| St. Catherine and Mountain.....          | "    | 7  | Bringing valve covers to level..... | Paving.                |
| " and Crescent.....                      | "    | "  | " ".....                            | "                      |
|  |      | "  | " ".....                            | "                      |

No. 10.—Schedule showing the Repairs done to Main Pipes, Hydrants and Valves during year 1891.

| POSITION.                         | DATE. | Diameter.    | Valves. | Hydrants. | HOW REPAIRED.                        | Probable cause of injury.   |
|-----------------------------------|-------|--------------|---------|-----------|--------------------------------------|-----------------------------|
| St. Catherine and Bishop .....    | July  | 7 12" .....  | 1       | 1         | Bringing valve covers to level. .... | Paving                      |
| " and Mackay .....                | "     | " 12" .....  | 1       | 1         | " " " .....                          | "                           |
| Notre-Dame and Colborne .....     | "     | " 10" .....  | 1       | 1         | Put in new pipe .....                | Men making drain broke pipe |
| University at Sherbrooke .....    | 8     | 8 .....      | 1       | 1         | " " valve .....                      | Valve worn out.             |
| St. Jean-Bte and Maple .....      | "     | " .....      | 1       | 1         | " " " .....                          | " " "                       |
| St. Catherine and St. Alexander.. | "     | " .....      | 1       | 1         | " " " .....                          | " " "                       |
| Ottawa and Queen .....            | "     | " .....      | 1       | 1         | " " " .....                          | " " "                       |
| McGill at Recollet. ....          | 10    | 10 .....     | 1       | 1         | Raising valve chamber .....          | To new level.               |
| St Catherine and Delorimier ..... | "     | " .....      | 1       | 1         | " " " .....                          | " " "                       |
| Ontario and Papineau .....        | 11    | 11 .....     | 1       | 1         | Renewing valve chamber .....         | Old age.                    |
| Dorchester and Papineau.. ..      | "     | " .....      | 1       | 1         | Paising valve cover .....            | New level.                  |
| Lemoine and McGill .....          | 12    | 12 .....     | 1       | 1         | " " " .....                          | " " "                       |
| Ann and Wellington .....          | "     | " 4" .....   | 1       | 1         | Repacking valve .....                | Packing worn out.           |
| St. Maurice and Dupré lane .....  | 13    | 13 4" .....  | 1       | 1         | Put in new piece .....               | Old age.                    |
| Notre-Dame opp. No. 2051 .....    | 14    | 14 10" ..... | 1       | 1         | Recaulked joint .....                | Joint blown out.            |
| Chaboillez and St. James .....    | "     | " 4" .....   | 1       | 1         | " " " .....                          | " " "                       |
| College opp. No. 66 .....         | 15    | 15 4" .....  | 1       | 1         | Put in new piece .....               | Old age.                    |
| Logan and Moreau .....            | 16    | 16 .....     | 1       | 1         | " " valve .....                      | Valve worn out.             |
| Centre and St. Francis .....      | 17    | 17 .....     | 1       | 1         | " " " .....                          | " " "                       |
| Smith and McCord .....            | "     | " .....      | 1       | 1         | " " " .....                          | " " "                       |
| Victoria at Burnside .....        | "     | " .....      | 1       | 1         | " " column. (hydr.) .....            | Old one split by frost.     |
| Craig and St. Denis .....         | 18    | 18 12" ..... | 1       | 1         | Recaulked joint .....                | Joint blown out.            |
| Rachel and Montana .....          | "     | " .....      | 1       | 1         | Put in new valve .....               | Valve worn out.             |
| St. Urbain and St. Cuthbert ..... | 19    | " .....      | 1       | 1         | " " " .....                          | " " "                       |
| Workman and Canning .....         | "     | " 4" .....   | 1       | 1         | " " spin.ile .....                   | Old one worn out.           |
| Marlborough and Logan .....       | 20    | 20 .....     | 1       | 1         | Repaired hydrant rod .....           | Rough usage.                |
| Kent and Shaw .....               | "     | " .....      | 1       | 1         | Raised valve stone .....             | New level.                  |



[illegible]

|                                    |        |   |                                |                        |
|------------------------------------|--------|---|--------------------------------|------------------------|
| Albert and St. Felix .....         | 16"    | 1 | Put in new valve .....         | Valve worn out.        |
| Commissioners and Grey Nun... ..   | 16     | 1 | " .....                        | "                      |
| Shuter St 1st .....                | 16     | 1 | " .....                        | "                      |
| Common and Colborne .....          | 16     | 1 | Put two fender posts .....     | To protect hydrant.    |
| Ann and Welling'ou .....           | 16     | 1 | Renewed valve Chamber .....    | Falling in.            |
| St. Catherine and Union Av .....   | 17 6"  | 1 | Raising valve Cover .....      | aving.                 |
| " and German .....                 | 17 6"  | 1 | " .....                        | "                      |
| St. James and Victoria Sq .....    | 17 10" | 1 | " .....                        | "                      |
| Frontenac and Ontario .....        | 17 6"  | 1 | " .....                        | "                      |
| Harbour and Notre Dame .....       | 17 6"  | 1 | " .....                        | "                      |
| Papineau and Dorchester .....      | 17 6"  | 1 | " .....                        | "                      |
| St. Eienne at G. T. Office .....   | 18     | 1 | Put in new valve .....         | Valve worn out.        |
| Carleton Road .....                | 19 20" | 1 | Recaulked joint .....          | Joint of suction pipe. |
| Ottawa and St. Thomas .....        | 20     | 1 | Put fender posts .....         | To protect hydrant.    |
| Craig and Gain .....               | 20     | 1 | Cleaned hydrant drain .....    | Drain choked.          |
| Common and King .....              | 21     | 1 | Put in new valve .....         | Valve worn out.        |
| St. Antoine and Mountain .....     | 21 12" | 1 | Reased spindle .....           | Too hard.              |
| St. Urbain and St. Catherine ..... | 22 1"  | 1 | Bringing stone to level .....  | aving.                 |
| Parthenais and .....               | 22 8"  | 1 | " .....                        | "                      |
| Inspector and St. James .....      | 23 12" | 1 | " .....                        | "                      |
| Papineau and Lagauchetière .....   | 23 10" | 1 | " .....                        | "                      |
| Commiss. at Custom House .....     | 24 3"  | 1 | " .....                        | "                      |
| Vallee and St. George .....        | 25     | 1 | Renewing hydrant chamber ..... | Falling in.            |
| St. Felix and St. James .....      | 25     | 1 | " .....                        | "                      |
| Marie Anne Cor. Berri .....        | 26     | 1 | Cleaned drain to hydrant ..... | Hydrant drain choked.  |
| Dorchester and Windsor .....       | 26     | 1 | Put in new valve .....         | Valve worn out.        |
| St. James and Mountain .....       | 27 10" | 1 | Repaired valve .....           | Packing worn out.      |
| Common and Queen .....             | 27     | 1 | Put drain to hydrant .....     | No drain.              |
| Ottawa and Ann .....               | 27 10" | 1 | Recaulked joint .....          | Joint blown out.       |
| Notre Dame and Colborne .....      | 27     | 1 | Repaired hydrant rod .....     | Rough usage.           |
| Richmond Cor. G. T. R .....        | 28     | 1 | " .....                        | "                      |
| Notre Dame and Harbour .....       | 28     | 1 | " .....                        | "                      |
| Basin and Seigneurs .....          | 28 1"  | 1 | Raised valve stone .....       | To new level.          |
| Balmoral and St. Catherine .....   | 28 1"  | 1 | Lowering valve stone .....     | "                      |

No. 10.—Schedule showing the Repairs done to Main Pipes, Hydrants and Valves during year 1891.

| POSITION.   | DATE. | Diameter.   | Valves. | Hydrants. | HOW REPAIRED.              | Probable cause of injury.  |
|---|-------|-------------|---------|-----------|----------------------------|----------------------------|
| St. Lawrence and St. Catherine...                       | Aug.  | 28 12"..... | 1       | 1         | Lowering valve stone.....  | To new level.              |
| Lagauchetière and Bleury.....                           | "     | 28 6".....  | 1       | 1         | Renewed valve chamber..... | Falling away, old age.     |
| Cherrier and Maple.....                                 | "     | 28 6".....  | 1       | 1         | Raised valve stone.....    | New level.                 |
| St. Paul and McGill.....                                | "     | 30 12"..... | 1       | 1         | Lowered valve stone.....   | " "                        |
| Suzanne and St. Catherine.....                          | "     | 31 12"..... | 1       | 1         | Raised " ".....            | " "                        |
| " ".....  | "     | 31 4".....  | 1       | 1         | " " ".....                 | " "                        |
| Bleury ".....   | Sept. | 1 12".....  | 1       | 1         | " " ".....                 | " "                        |
| Guy and William.....                                    | "     | 2 4".....   | 1       | 1         | Recaulked joint.....       | Joint blown out.           |
| " at Canal.....   | "     | 2 24".....  | 1       | 1         | " ".....                   | " "                        |
| Notre-Dame and Inspector.....                           | "     | 3.....      | 1       | 1         | Took out hydrant.....      | Not in use.                |
| Roy and Cadieux.....                                    | "     | 3.....      | 1       | 1         | Put in new valve.....      | Valve worn out.            |
| Collège and Inspector.....                              | "     | .....       | 1       | 1         | Recaulked joint.....       | Joint blown out.           |
| St. James and Seigneurs.....                            | "     | 4.....      | 1       | 1         | Put in new valve.....      | Valve worn out.            |
| Latour and Busby.....                                   | "     | 4.....      | 1       | 1         | " " ".....                 | " "                        |
| St. Urbain and Mount-Royal av...<br>Desrivères Ave..... | "     | 4".....     | 1       | 1         | Repacked valve.....        | Packing of valve worn out. |
| Aqueduct and St. James.....                             | "     | 5.....      | 1       | 1         | Put in new valve.....      | Valve worn out.            |
| Shannon and Willam.....                                 | "     | 5 4".....   | 1       | 1         | Repacked valve.....        | Worn out.                  |
| St. Peter and St. Paul.....                             | "     | 6".....     | 1       | 1         | Recaulked joint.....       | Joint worn out.            |
| St. Urbain and St. Catherine.....                       | "     | 6 10".....  | 1       | 1         | Raising valve cover.....   | To new level.              |
| St. Catherine E. of St. Denis.....                      | "     | 6 4".....   | 1       | 1         | " " ".....                 | " "                        |
| Dubord and St. Hubert.....                              | "     | 12".....    | 1       | 1         | " " ".....                 | " "                        |
| Cherrier and St. Denis.....                             | "     | 7 6".....   | 1       | 1         | Recaulked joint.....       | Joint blown out.           |
| St. Denis and Craig.....                                | "     | 12".....    | 1       | 1         | Put new iron frame.....    | Stone worn out.            |
| Sanguinet and St. Catherine.....                        | "     | 8 12".....  | 1       | 1         | Raised valve cover.....    | New level.                 |
| St. Paul fr. McGill to St. Sulpice                      | "     | 8 12".....  | 1       | 1         | " " ".....                 | " "                        |
|   | "     | 8 12".....  | 1       | 1         | " " ".....                 | " "                        |

|   |    |   |                                 |                  |
|---|----|---|---------------------------------|------------------|
| St. Antoine and Inspector .....         | 7  | 1 | Put in new valve .....          | Valve worn out.  |
| St. James and Chalboillez .....         | 8  | 1 | " " " " .....                   | " " "            |
| St. Paul at C. H. Square .....          | 8  | 1 | " " " " .....                   | " " "            |
| St. Catherine and St. Constant .....    | 8  | 1 | " " " " .....                   | " " "            |
| Lagauchetière and Alexander .....       | 9  | 1 | " " " " piece .....             | Old age.         |
| Wellington and Colborne .....           | 9  | 1 | " " " " valve .....             | Valve worn out.  |
| St. Cath bet. St. Law & St. Denis ..... | 10 | 1 | Raised valve stone .....        | To new level.    |
| Lagauchetière and Berri .....           | 11 | 1 | Repair to hydrant chamber ..... | Old age.         |
| Visitation and Robin .....              | 12 | 1 | Repair to valve chamber .....   | " "              |
| St. Sulpice and St. Paul .....          | 13 | 1 | Put new iron frames .....       | Paving.          |
| Vitré and St. Denis .....               | 13 | 1 | Raised valve covers .....       | New level.       |
| St. Catherine and Dufresne .....        | 14 | 1 | " " " " .....                   | " "              |
| St. Paul and St. Gabriel .....          | 14 | 1 | " " " " .....                   | " "              |
| St. George and St. Catherine .....      | 15 | 1 | " " " " .....                   | " "              |
| Inspector and St. Antoine .....         | 16 | 1 | Recalculated joint .....        | Joint blown out. |
| University opp. Wesleyan Coll. .....    | 16 | 1 | Put in new valve .....          | Valve worn out.  |
| Lacroix and Champ de Mars .....         | 16 | 1 | " " " " .....                   | " "              |
| Richmond near St. Catherine .....       | 16 | 1 | " " " " .....                   | " "              |
| Balmoral and St. Catherine .....        | 16 | 1 | Lowered valve stone .....       | To new level.    |
| St. Luke and St. Mathew .....           | 17 | 1 | Raised valve stone .....        | " "              |
| " Fort .....                            | 17 | 1 | " " " " .....                   | " "              |
| " Tower .....                           | 18 | 1 | " " " " .....                   | " "              |
| Harbour and St. Catherine .....         | 18 | 1 | Put new iron frame .....        | Paving.          |
| Frontenac .....                         | 19 | 1 | " " " " .....                   | " "              |
| Fullum and Ontario .....                | 20 | 1 | " " " " .....                   | " "              |
| St. Denis .....                         | 21 | 1 | Lowered valve stone .....       | " "              |
| Elm av. .....                           | 22 | 1 | " " " " .....                   | " "              |
| " .....                                 | 22 | 1 | Recalculated joint .....        | Joint blown out. |
| Victoria Square .....                   | 23 | 1 | " " " " .....                   | " "              |
| Guy opp. No. 512 .....                  | 23 | 1 | " " " " .....                   | " "              |
| Sherbrooke and Berri .....              | 24 | 1 | Put in new valve .....          | Valve worn out.  |
| Notre-Dame and Visitation .....         | 24 | 1 | " " " " rod .....               | Rod too short.   |

1000

1000

1000

1000



|   |      |        |   |                               |                                 |
|---|------|--------|---|-------------------------------|---------------------------------|
| LaFontaine corner Dupras.                       | Oct. | 4 1/2" | 1 | Raised valve cover.           | New level.                      |
| St. André and Ontario.                          | "    | 5 9"   | 1 | "                             | "                               |
| St. Alexander and Brindley.                     | "    | 6      | 1 | Rebuilt hydrant chamber.      | Falling in.                     |
| College opp. 14.                                | "    | 7 4"   | 1 | Put in new piece.             | Old age.                        |
| Papineau opp. Robert.                           | "    | 8      | 1 | Removing hydrant to new line. | New line.                       |
| Ontario and Sanguinet.                          | "    | 9      | 1 | "                             | "                               |
| Lacroix and Champ de Mars.                      | "    | 9      | 1 | Recalked joint.               | Joint blown out.                |
| Notre Dame and Mariborough.                     | "    | 10     | 1 | "                             | "                               |
| " and Moreau.                                   | "    | 11     | 1 | "                             | "                               |
| 47 College street.                              | "    | 11 4"  | 1 | Put in new piece.             | Old age.                        |
| McCreau at Hospital.                            | "    | 12     | 1 | Put in new valve.             | Valve worn out.                 |
| Guy opp. 36.                                    | "    | 12 20" | 1 | Repaired drain.               | Broken by laying 20" main.      |
| St. Lawrence and St. Catherine.                 | "    | 13 6"  | 1 | Revised valve cover.          | New level.                      |
| Mignonne and St. Denis.                         | "    | 13 12" | 1 | Lowered valve cover.          | "                               |
| St. Monique and Dorchester.                     | "    | 14 12" | 1 | Put in new piece.             | Settling of intercepting sewer. |
| Cathcart and St. Monique.                       | "    | 14 4"  | 1 | Repacked valve.               | Packing worn out.               |
| Arn N. of Wellington.                           | "    | 15 4"  | 1 | Recalked joint.               | Joint leaking.                  |
| St. J. Bte and Cadieux.                         | "    | 15     | 1 | Put in a new valve.           | Valve worn out.                 |
| William and Guy.                                | "    | 16     | 1 | "                             | "                               |
| Montcalm and Water.                             | "    | 16 4"  | 1 | Repacked valve.               | Packing worn out.               |
| Iberville and Ontario.                          | "    | 17 4"  | 1 | Put in a new piece.           | Settling of drain cut.          |
| Mignonne at Reformatory.                        | "    | 17     | 1 | Raised hydrant.               | Too low.                        |
| Ontario opp.                                    | "    | 18     | 1 | "                             | "                               |
| McCord and Ottawa.                              | "    | 18 12" | 1 | Examined for leak.            | Private drain not connected.    |
| St. Denis and Ontario.                          | "    | 19 12" | 1 | Raised valve cover.           | New level.                      |
| Ann and Wellington.                             | "    | 19 4"  | 1 | Rebuilt valve chamber.        | Falling in.                     |
| Mignonne and Montcalm.                          | "    | 19 12" | 1 | Recutting stone.              | Worn down.                      |
| St. Lawrence and Ontario.                       | "    | 20 12" | 1 | Put in new iron frame.        | Paving (New level).             |
| St. Dominique and "                             | "    | 20 4"  | 1 | "                             | "                               |
| St. Peter and Craig.                            | "    | 20 8"  | 1 | "                             | "                               |
| Fortification and St. Peter.                    | "    | 20 8"  | 1 | "                             | "                               |
| Water and Montcalm.                             | "    | 20 4"  | 1 | "                             | "                               |
| St. Christophe and Ontario.                     | "    | 20 4"  | 1 | "                             | "                               |
| Picaville av. from Côte des Neiges to Durocher. | "    | 20 12" | 1 | "                             | "                               |

No 10.—Schedule showing the Repairs done to Main Pipes, Hydrants and Valves during year 1891.

| POSITION.                          | DATE. | Diameter. | Valves. | Hydrants. | HOW REPAIRED.                   | Probable cause of injury. |
|------------------------------------|-------|-----------|---------|-----------|---------------------------------|---------------------------|
| St James and Lusignan.....         | Sept  | 25        | 1       | 1         | Put in new valve .....          | Valve worn out.           |
| Pine av and Manch.....             | "     | 25        | 1       | 1         | Recaulked joint.....            | Joint blown out.          |
| St. James near St. Felix.....      | "     | 25 10     | 1       | 1         | Examining for leaks.....        | Ground boggy.             |
| McDougall's Foundry.....           | "     | 26        | 1       | 1         | Recaulked joint.....            | Joint blown out.          |
| Sherbrooke and St. Denis .....     | "     | 26 30     | 1       | 1         | Repaired valve chamber.....     | Falling away.             |
| " and Amherst.....                 | "     | 26 20     | 1       | 1         | Put drain to valve chamber..... | No drain.                 |
| St. Lawrence and Fortier.....      | "     | 27 6      | 1       | 1         | Put in new piece .....          | Settling of drain cut.    |
| St. Elizabeth and St. Catherine .. | "     | 27 12     | 1       | 1         | Raised valve stone.....         | New level.                |
| Delorimier opp. H. M. L.....       | "     | 28 12     | 1       | 1         | " .....                         | "                         |
| " and Burnette .....               | "     | 28 12     | 1       | 1         | " .....                         | "                         |
| St. George and Devienne.....       | "     | 29 4      | 1       | 1         | Rebuilt valve chamber.....      | Falling in.               |
| McGill Coll. Av. and Sherbr.....   | "     | 29 6      | 1       | 1         | Raised valve stone.....         | New lev. l.               |
| LaFontaine and Delorimier .....    | "     | 30 12     | 1       | 1         | " .....                         | "                         |
| St. Hubert and Ontario.....        | "     | 30 6      | 1       | 1         | " .....                         | "                         |
| St. Catherine and Sussex.....      | "     | 30 24     | 1       | 1         | Repaired valve chamber.....     | Falling in.               |
| Pine avenue and Park avenue.....   | "     | 30 12     | 1       | 1         | Recaulked joint.....            | Joint blown out.          |

| Location                    | Size    | Quantity | Description      | Remarks                |
|-----------------------------|---------|----------|------------------|------------------------|
| Sherbrooke and Atwater      | 19 1/2" | 1        | Repacked valve   |                        |
| St. Urbain opp. 167         | 19 1/2" | 1        | Recaulked joint  | Well set.              |
| Laval and Pine Avenue       | 20 6"   | 1        | Put in new valve | "                      |
| Fulford and St. Antoine     | 20 6"   | 1        | Recaulked joint  | Joint blown out.       |
| St. George and Craig        | 20 6"   | 1        | Recaulked joint  | New level.             |
| Charlevoix and Knox         | 20 6"   | 1        | Recaulked joint  | Settling of drain cut. |
| Beaudry and Chambly         | 20 6"   | 1        | Recaulked joint  | New level.             |
| Visitation at St. Catherine | 20 6"   | 1        | Recaulked joint  |                        |
| Bleury and Ontario          | 20 6"   | 1        | Recaulked joint  |                        |
| Berri and Dubord            | 20 6"   | 1        | Recaulked joint  |                        |
| Sanguinet at Ernest         | 20 6"   | 1        | Recaulked joint  |                        |
| William and King            | 20 6"   | 1        | Recaulked joint  |                        |
| Seigneurs and St. Antoine   | 20 6"   | 1        | Recaulked joint  |                        |
| St. James and Windsor       | 20 6"   | 1        | Recaulked joint  |                        |

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| Location                           | Depth  | Remarks              | Notes                |
|------------------------------------|--------|----------------------|----------------------|
| St. Lawrence                       | 5 1/2" | Reinforced hydraulic | Reinforced hydraulic |
| St. Sulpice and Notre-Dame         | 5 1/2" | Reinforced hydraulic | Reinforced hydraulic |
| Chenueville and Lagauchière        | 5 1/2" | Reinforced hydraulic | Reinforced hydraulic |
| Harbour opp. Logan                 | 5 1/2" | Reinforced hydraulic | Reinforced hydraulic |
| Eleonor and William                | 5 1/2" | Reinforced hydraulic | Reinforced hydraulic |
| Smith and Murray                   | 5 1/2" | Reinforced hydraulic | Reinforced hydraulic |
| St. Lawrence and Sherbrooke        | 5 1/2" | Reinforced hydraulic | Reinforced hydraulic |
| Dorchester and Colormier av        | 5 1/2" | Reinforced hydraulic | Reinforced hydraulic |
| Logan and Iberville                | 5 1/2" | Reinforced hydraulic | Reinforced hydraulic |
| Mackay and Dorchester              | 5 1/2" | Reinforced hydraulic | Reinforced hydraulic |
| Bishop and                         | 5 1/2" | Reinforced hydraulic | Reinforced hydraulic |
| St. Catherine opp. No. 5 River St. | 5 1/2" | Reinforced hydraulic | Reinforced hydraulic |



**SCHEDULE No. 11—SHOWING THE DIFFERENT KINDS AND SIZES  
OF METERS BELONGING TO THE CITY AND TO PRIVATE PARTIES.**

| Kinds.         | Sizes in inches | Property of the city. |               |               |        | Property of private parties. |               |               |        |              |
|----------------|-----------------|-----------------------|---------------|---------------|--------|------------------------------|---------------|---------------|--------|--------------|
|                |                 | In the City.          | Outside City. | At work shop. | Total. | In the City.                 | Outside City. | At work shop. | Total. | Grand total. |
| Gem .....      | 10              |                       |               | 2             | 2      |                              |               |               |        | 2            |
| " .....        | 6               | 4                     | 1             | 1             | 6      | 4                            |               |               | 4      | 10           |
| " .....        | 4               | 18                    |               | 5             | 23     | 5                            |               |               | 5      | 28           |
| " .....        | 3               | 68                    |               | 5             | 73     | 9                            |               |               | 9      | 82           |
| " .....        | 2               | 29                    |               | 3             | 32     | 6                            |               |               | 6      | 38           |
| " .....        | 1½              | 7                     |               | 3             | 10     | 4                            |               |               | 4      | 14           |
| Union .....    | 2               |                       |               |               |        | 1                            |               |               | 1      | 1            |
| " .....        | 1               | 16                    |               |               | 16     |                              |               |               |        | 16           |
| " .....        | ¾               | 30                    |               |               | 30     |                              |               |               |        | 30           |
| Rotary Union.. | 1½              | 2                     |               |               | 2      |                              |               |               |        | 2            |
| Crown .....    | 6               | 2                     |               |               | 2      | 1                            | 2             |               | 3      | 5            |
| " .....        | 4               | 18                    | 1             |               | 19     | 4                            |               |               | 4      | 23           |
| " .....        | 3               | 21                    | 1             | 1             | 23     | 2                            |               |               | 2      | 25           |
| " .....        | 2               | 19                    | 3             |               | 22     | 3                            |               |               | 3      | 25           |
| " .....        | 1½              | 20                    |               | 2             | 22     | 2                            |               |               | 2      | 24           |
| " .....        | 1               | 38                    |               | 12            | 50     |                              |               |               |        | 50           |
| " .....        | ¾               | 34                    |               | 14            | 48     | 1                            |               |               | 1      | 49           |
| " .....        | ¾               | 98                    |               | 25            | 123    | 2                            |               |               | 2      | 125          |
| Empire .....   | 2               | 6                     |               |               | 6      |                              |               |               |        | 6            |
| " .....        | 1               | 25                    |               | 5             | 30     | 1                            |               |               | 1      | 31           |
| " .....        | ¾               | 6                     |               |               | 6      |                              |               |               |        | 6            |
| " .....        | ¾               | 70                    |               | 14            | 84     |                              |               |               |        | 84           |
| Worthington .. | 4               |                       |               |               |        | 1                            |               |               | 1      | 1            |
| " .....        | 3               | 1                     |               | 1             | 2      |                              |               |               |        | 2            |
| " .....        | 2               | 9                     |               | 1             | 10     | 5                            |               |               | 5      | 15           |
| " .....        | 1½              | 12                    |               | 1             | 13     | 1                            |               |               | 1      | 14           |
| " .....        | 1               | 35                    | 1             | 12            | 48     |                              |               |               |        | 48           |
| " .....        | ¾               | 43                    |               | 19            | 62     | 2                            |               |               | 2      | 64           |
| Hersey .....   | 1               | 1                     |               | 2             | 3      |                              |               |               |        | 3            |
| " .....        | ¾               | 7                     |               | 3             | 10     |                              |               |               |        | 10           |
|                |                 | 639                   | 7             | 131           | 777    | 54                           | 2             |               | 56     | 833          |



No. 12.—Schedule showing the Pipes, Hydrants, Valves, Services, &c., laid in the City of Montreal, during the year 1891.

| NAME OF<br>STREETS.    | Length in feet of cast iron pipes. |     |     |     |     |     |     |    |    |       | No. of Valves. |     |     |     |     |     |    |    |    |       | Wrought<br>Iron Pipe. | Hydrants. | Length of<br>Lead Pipes<br>in feet. | Houses<br>Supplied. | Brass cocks. | Air cocks. |   |  |  |
|------------------------|------------------------------------|-----|-----|-----|-----|-----|-----|----|----|-------|----------------|-----|-----|-----|-----|-----|----|----|----|-------|-----------------------|-----------|-------------------------------------|---------------------|--------------|------------|---|--|--|
|                        | Length in feet of cast iron pipes. |     |     |     |     |     |     |    |    |       | No. of Valves. |     |     |     |     |     |    |    |    |       |                       |           |                                     |                     |              |            |   |  |  |
|                        | 30"                                | 24" | 20" | 16" | 12" | 10" | 8"  | 6" | 4" | Total | 30"            | 24" | 20" | 16" | 12" | 10" | 8" | 6" | 4" | Total |                       |           |                                     |                     |              |            |   |  |  |
| <i>East Ward.</i>      |                                    |     |     |     |     |     |     |    |    |       |                |     |     |     |     |     |    |    |    |       |                       |           |                                     |                     |              |            |   |  |  |
| Notre Dame             |                                    |     |     |     |     | 2   |     |    |    | 2     |                |     |     |     |     | 1   |    |    |    | 1     |                       |           |                                     |                     |              |            |   |  |  |
| Barracks               |                                    |     |     |     |     |     |     | 2  |    | 2     |                |     |     |     |     |     |    | 1  |    | 1     |                       |           |                                     |                     |              |            |   |  |  |
| St. Louis              |                                    |     |     |     |     |     |     |    | 3  | 3     |                |     |     |     |     |     |    |    | 1  | 1     |                       |           |                                     |                     |              |            |   |  |  |
| Bonsecours             |                                    |     |     |     |     |     |     |    | 3  | 3     |                |     |     |     |     |     |    |    | 1  | 1     |                       |           |                                     |                     | 66           | 9          |   |  |  |
| Le Royer               |                                    |     |     |     |     |     |     |    | 9  | 199   |                |     |     |     |     |     |    |    | 1  | 1     |                       |           |                                     |                     |              |            |   |  |  |
| Friponne               |                                    |     |     |     |     |     |     |    | 9  | 239   |                |     |     |     |     |     |    | 1  | 1  | 1     |                       |           |                                     |                     |              |            |   |  |  |
| Champ de Mars          |                                    |     |     |     | 778 | 3   | 43  |    | 4  | 828   |                |     |     |     | 2   |     |    |    |    | 2     |                       |           |                                     |                     |              |            |   |  |  |
| Total                  |                                    |     |     |     | 778 | 5   | 463 | 2  | 28 | 1276  |                |     |     |     | 2   |     | 1  | 1  | 3  | 8     |                       |           | 7                                   | 86                  | 9            |            |   |  |  |
| <i>Centre Ward.</i>    |                                    |     |     |     |     |     |     |    |    |       |                |     |     |     |     |     |    |    |    |       |                       |           |                                     |                     |              |            |   |  |  |
| Notre Dame             |                                    |     |     |     |     |     |     |    | 16 | 16    |                |     |     |     |     |     |    |    | 1  | 1     |                       |           |                                     |                     |              |            |   |  |  |
| Commissioners          |                                    |     |     |     |     |     |     |    | 16 | 16    |                |     |     |     |     |     |    |    | 1  | 1     |                       |           |                                     |                     |              |            |   |  |  |
| Fortification (lane)   |                                    |     |     |     |     |     |     |    |    |       |                |     |     |     |     |     |    |    |    |       |                       |           |                                     |                     | 21           | 1          | 1 |  |  |
| St. Paul               |                                    |     |     |     |     |     |     |    | 20 | 20    |                |     |     |     |     |     |    |    | 2  | 2     |                       |           |                                     |                     |              |            |   |  |  |
| St. Sulpice            | 156                                | 3   |     |     |     |     |     |    | 2  | 161   |                |     |     |     |     |     |    |    | 1  | 1     |                       |           |                                     |                     |              |            |   |  |  |
| St. Gabriel            |                                    |     |     |     |     |     |     |    | 3  | 3     |                |     |     |     |     |     |    |    | 1  | 1     |                       |           |                                     |                     |              | 41         | 1 |  |  |
| Debresoles             |                                    |     |     |     |     |     |     |    |    |       |                |     |     |     |     |     |    |    |    |       |                       |           |                                     |                     |              |            |   |  |  |
| Total                  | 156                                | 3   |     |     |     |     |     |    | 57 | 216   |                |     |     |     |     |     |    |    | 6  | 6     |                       |           |                                     |                     | 62           | 4          | 1 |  |  |
| <i>West Ward.</i>      |                                    |     |     |     |     |     |     |    |    |       |                |     |     |     |     |     |    |    |    |       |                       |           |                                     |                     |              |            |   |  |  |
| Fortification (Lane)   |                                    |     |     |     |     |     | 10  | 7  |    | 17    |                |     |     |     |     |     |    |    |    |       |                       |           |                                     |                     |              |            |   |  |  |
| St. Paul               |                                    |     |     |     |     |     |     |    | 19 | 19    |                |     |     |     |     |     |    |    | 1  | 1     |                       |           |                                     |                     |              |            |   |  |  |
| St. Peter              |                                    |     |     |     |     |     |     |    | 4  | 4     |                |     |     |     |     |     |    |    |    |       |                       |           |                                     |                     |              | 26         | 2 |  |  |
| Notre Dame             |                                    |     |     |     |     |     |     |    |    |       |                |     |     |     |     |     |    |    |    |       |                       |           |                                     |                     |              |            |   |  |  |
| St. Hélène             |                                    |     |     |     |     |     |     |    | 28 | 28    |                |     |     |     |     |     |    |    | 1  | 1     |                       |           |                                     |                     |              |            |   |  |  |
| Total                  |                                    |     |     |     |     |     | 10  | 7  | 51 | 68    |                |     |     |     |     |     |    |    | 2  | 2     |                       |           |                                     |                     | 96           | 5          |   |  |  |
| <i>St. Ann's Ward.</i> |                                    |     |     |     |     |     |     |    |    |       |                |     |     |     |     |     |    |    |    |       |                       |           |                                     |                     |              |            |   |  |  |
| Seigneurs              |                                    |     |     |     |     |     |     |    |    | 48    |                |     |     |     |     |     |    |    | 1  | 1     |                       |           |                                     |                     |              |            |   |  |  |











[illegible]

Fig. 12.—*Arctostaphylos uva-ursi*, L.,—*Continued*.

| Name of Station             | Lengths in Feet of each stem piece |   |   |   |   |   |   |   |   |    | No. of Voles |    |    |    |    | Total Voles | Total Length of Voles | No. of Tracks | Total Length of Tracks | No. of Signs |
|-----------------------------|------------------------------------|---|---|---|---|---|---|---|---|----|--------------|----|----|----|----|-------------|-----------------------|---------------|------------------------|--------------|
|                             | 1                                  | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11           | 12 | 13 | 14 | 15 |             |                       |               |                        |              |
| <b>St. Louis Ward—Cont.</b> |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Brought forward             | 377                                |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Perthuis                    |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Wolfe                       |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Reverend                    |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| St. Denis                   |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| St. Catherine               |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Water                       |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Key                         |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Contant                     |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| <b>Total</b>                | 377                                |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| <b>St. Mary Ward</b>        |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Maisonnette                 |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Champlain                   |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Fullum                      |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| St. Catherine               |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Ontario                     |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Gain                        |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Erie                        |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Panet                       |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Plessis                     |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Parker Lane                 |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Papineau Road               |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Leguecheffere               |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Mignonne                    |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Suzanne                     |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Dorchester                  |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| Laboulaye                   |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |
| De Loraine                  |                                    |   |   |   |   |   |   |   |   |    |              |    |    |    |    |             |                       |               |                        |              |



No. 12.—Schedule showing the Pipes &c.—Continued.

| NAME OF STAKES.         | Length in feet of Cast Iron Pipes. |     |     |     |      |     |    |      |    |        | No. of Valves. |     |     |     |     |     |    |    |    |        | Wrought Iron Pipe. | Hydrants. | Length of Lead Pipes in feet. | Houses Supplied. | Press Cocks. | Air Cocks. |   |     |
|-------------------------|------------------------------------|-----|-----|-----|------|-----|----|------|----|--------|----------------|-----|-----|-----|-----|-----|----|----|----|--------|--------------------|-----------|-------------------------------|------------------|--------------|------------|---|-----|
|                         | 30"                                | 24" | 20" | 16" | 12"  | 10" | 8" | 6"   | 4" | Total. | 30"            | 24" | 20" | 16" | 12" | 10" | 8" | 6" | 4" | Total. |                    |           |                               |                  |              |            |   |     |
| St. J. - Ste W. - Cont. |                                    |     |     |     |      |     |    |      |    |        |                |     |     |     |     |     |    |    |    |        |                    |           |                               |                  |              |            |   |     |
| Brought forward.        |                                    |     |     |     |      |     |    |      |    |        |                |     |     |     |     |     |    |    |    |        |                    |           |                               |                  |              |            |   |     |
| Amherst                 |                                    |     |     |     | 274  |     |    | 3079 | 30 | 9      | 3098           |     |     |     |     |     |    |    | 1  | 1      | 7                  |           |                               | 0                | 3716         | 306        | 3 | 308 |
| St. Hubert              |                                    |     |     |     | 324  |     |    |      | 19 |        | 342            |     |     |     | 1   |     |    |    |    |        | 1                  |           |                               | 1                | 336          | 10         |   | 10  |
| Michelson               |                                    |     |     |     |      |     |    | 132  |    |        | 132            |     |     |     |     |     | 1  |    |    |        | 1                  |           |                               |                  |              |            |   |     |
| Panet                   |                                    |     |     |     |      |     |    | 912  |    | 6      | 918            |     |     |     |     |     | 2  |    |    |        | 2                  |           |                               | 3                |              |            |   |     |
| Total                   |                                    |     |     |     | 1095 |     |    | 4123 | 54 | 15     | 6390           |     |     |     | 1   |     | 2  | 1  | 1  | 11     |                    |           |                               | 10               | 6187         | 325        | 9 | 323 |
| Hochelaga Ward.         |                                    |     |     |     |      |     |    |      |    |        |                |     |     |     |     |     |    |    |    |        |                    |           |                               |                  |              |            |   |     |
| Rouville                |                                    |     |     |     |      |     |    | 72   |    |        | 72             |     |     |     |     |     |    |    |    |        | 1                  |           |                               |                  |              |            |   |     |
| Gale                    |                                    |     |     |     |      |     |    | 441  |    |        | 441            |     |     |     |     |     |    |    |    |        | 1                  |           |                               |                  |              |            |   |     |
| Rohillard               |                                    |     |     |     |      |     |    | 754  | 6  |        | 760            |     |     |     |     |     | 2  |    |    | 2      |                    |           |                               |                  |              |            |   |     |
| Davidson                |                                    |     |     |     |      |     |    | 838  |    |        | 838            |     |     |     |     |     | 2  |    |    | 2      |                    |           |                               |                  |              |            |   |     |
| Cuvilliers              |                                    |     |     |     |      |     |    |      |    |        |                |     |     |     |     |     |    |    |    |        |                    |           |                               |                  |              |            |   |     |
| Darling                 |                                    |     |     |     |      |     |    | 482  |    |        | 482            |     |     |     |     |     |    |    |    |        |                    |           |                               |                  |              |            |   |     |
| Ontario                 |                                    |     |     |     | 612  |     |    | 7    | 4  |        | 623            |     |     |     |     |     |    |    |    |        | 1                  |           |                               |                  |              |            |   |     |
| Notre Dame              |                                    |     |     |     |      |     |    | 16   | 14 |        | 30             |     |     |     |     |     |    |    |    |        |                    |           |                               |                  |              |            |   |     |
| Désery                  |                                    |     |     |     |      |     |    |      |    |        |                |     |     |     |     |     |    |    |    |        |                    |           |                               |                  |              |            |   |     |
| Frontenac               |                                    |     |     |     |      |     |    | 6    |    |        | 6              |     |     |     |     |     |    |    |    |        |                    |           |                               |                  |              |            |   |     |
| Beaver                  |                                    |     |     |     |      |     |    | 124  | 30 |        | 154            |     |     |     |     |     |    |    |    |        |                    |           |                               |                  |              |            |   |     |
| St Germain Lane         |                                    |     |     |     |      |     |    | 24   |    |        | 24             |     |     |     |     |     |    |    |    |        |                    |           |                               |                  |              |            |   |     |
| Préfontaine             |                                    |     |     |     |      |     |    | 108  |    |        | 108            |     |     |     |     |     |    |    |    |        |                    |           |                               |                  |              |            |   |     |
| Mignonne                |                                    |     |     |     |      |     |    |      |    |        |                |     |     |     |     |     |    |    |    |        |                    |           |                               |                  |              |            |   |     |
| Havre                   |                                    |     |     |     |      |     |    | 21   |    |        | 21             |     |     |     |     |     |    |    |    |        |                    |           |                               |                  |              |            |   |     |
| Marlborough             |                                    |     |     |     |      |     |    |      |    |        |                |     |     |     |     |     |    |    |    |        |                    |           |                               |                  |              |            |   |     |
| St Catherine            |                                    |     |     |     |      |     |    |      |    |        |                |     |     |     |     |     |    |    |    |        |                    |           |                               |                  |              |            |   |     |
| Total                   |                                    |     |     |     | 612  |     |    | 3076 | 10 | 20     | 3081           |     |     |     |     |     | 7  | 2  | 2  | 10     |                    |           |                               | 23               | 2224         | 131        | 3 | 183 |



| Manufacture    |        |     |    |      |  |  |  |  |  |  | 113 |
|----------------|--------|-----|----|------|--|--|--|--|--|--|-----|
| C. ote         |        |     |    |      |  |  |  |  |  |  |     |
| Knox           | 4      | 579 |    |      |  |  |  |  |  |  | 13  |
| Napoleon Road  |        |     |    |      |  |  |  |  |  |  | 29  |
| Washington     |        |     |    |      |  |  |  |  |  |  | 11  |
| Wharton        |        |     |    |      |  |  |  |  |  |  | 2   |
| Ruehbrook      | 189    |     |    |      |  |  |  |  |  |  | 4   |
| Grand Trunk    | 6      | 663 |    |      |  |  |  |  |  |  | 20  |
| Bourgeois      |        |     |    |      |  |  |  |  |  |  | 1   |
| Favard         | 619    |     |    |      |  |  |  |  |  |  | 6   |
| Ropery         |        |     |    |      |  |  |  |  |  |  | 95  |
| Atwater        | 300    |     |    |      |  |  |  |  |  |  | 9   |
| Col-rano       |        |     |    |      |  |  |  |  |  |  | 7   |
| Hilbertia Road |        |     |    |      |  |  |  |  |  |  | 20  |
| Island         |        |     |    |      |  |  |  |  |  |  | 4   |
| Magdalen       |        |     |    |      |  |  |  |  |  |  | 1   |
| Mullin         |        |     |    |      |  |  |  |  |  |  | 8   |
| Paris          |        |     |    |      |  |  |  |  |  |  | 19  |
| Rosary         |        |     |    |      |  |  |  |  |  |  | 10  |
| Ryde           |        |     |    |      |  |  |  |  |  |  | 2   |
| St Charles     |        |     |    |      |  |  |  |  |  |  | 80  |
| St Henri       |        |     |    |      |  |  |  |  |  |  | 93  |
| Dargeneon      |        |     |    |      |  |  |  |  |  |  | 1   |
| Liverpool      |        |     |    |      |  |  |  |  |  |  | 13  |
| Knox Avenue    |        |     |    |      |  |  |  |  |  |  | 31  |
| Ash Avenue     |        |     |    |      |  |  |  |  |  |  | 9   |
| Charlevoix     |        |     |    |      |  |  |  |  |  |  | 21  |
| Chateaugay     |        |     |    |      |  |  |  |  |  |  | 10  |
| Pacific Lane   |        |     |    |      |  |  |  |  |  |  | 0   |
| Total          | 105721 | 39  | 63 | 4233 |  |  |  |  |  |  | 404 |

# RECAPITULATION.

No. 12.—Schedule showing the Pipes, Hydrants, Valves, Services, &c., laid in the City of Montreal during the year 1891.

| WARDS.               | Length in feet of cast iron pipes. |      |      |      |       |       |       |     |      |       | No of Valves. |     |     |     |     |     |     |     |     |       | Wrought Iron Pipe. | Hydrants. | Length of lead pipes in feet. | Hoses supplied. | Rim Cocks. | Air Cocks. |      |
|----------------------|------------------------------------|------|------|------|-------|-------|-------|-----|------|-------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|-------|--------------------|-----------|-------------------------------|-----------------|------------|------------|------|
|                      |                                    |      |      |      |       |       |       |     |      |       |               |     |     |     |     |     |     |     |     |       |                    |           |                               |                 |            |            |      |
|                      | 30"                                | 24"  | 20"  | 16"  | 12"   | 10"   | 8"    | 6"  | 4"   | Total | 30"           | 24" | 20" | 16" | 12" | 10" | 8"  | 6"  | 4"  | Total |                    |           |                               |                 |            |            |      |
| East ..              | ...                                | ...  | ...  | ...  | 774   | 0     | 663   | 2   | 28   | 1270  | ...           | ... | ... | 2   | 1   | 1   | 1   | 3   | 6   | 2"    | 11"                | 7         | 80                            | 9               | ...        | 9          |      |
| Centre ..            | ...                                | 150  | 3    | ...  | ...   | ...   | ...   | ... | 67   | 216   | ...           | ... | ... | ... | ... | ... | ... | ... | ... | ...   | ...                | ...       | 43                            | 4               | 1          | 1          |      |
| West ..              | ...                                | ...  | ...  | ...  | ...   | ...   | 10    | 7   | 51   | 68    | ...           | ... | ... | ... | ... | ... | ... | ... | 2   | 2     | ...                | 1         | 90                            | 0               | ...        | 3          |      |
| St. Ann ..           | ...                                | 497  | ...  | ...  | 1693  | 2068  | 267   | 41  | 171  | 7067  | ...           | ... | ... | ... | ... | 3   | 10  | 3   | 9   | 29    | 28                 | 30        | 31                            | 2491            | 115        | 0          | 107  |
| St. Antoine ..       | 11                                 | 1032 | 1797 | 2714 | 10196 | 1680  | 3231  | 543 | 539  | 21713 | ...           | 1   | 1   | 3   | 23  | 9   | 22  | 10  | 21  | 90    | 55                 | 43        | 0"                            | 8106            | 200        | 47         | 339  |
| St. Lawrence ..      | ...                                | 1575 | ...  | ...  | 5995  | 1232  | 2728  | 145 | 181  | 11816 | ...           | 2   | ... | ... | 12  | 3   | 7   | 1   | 17  | 41    | ...                | ...       | 17                            | 6361            | 378        | 26         | 248  |
| St. Louis ..         | ...                                | 20   | ...  | ...  | 2131  | 1624  | 2345  | 38  | 100  | 6274  | ...           | ... | ... | ... | 3   | 0   | 12  | 2   | 4   | 28    | ...                | ...       | 27                            | 2207            | 147        | 7          | 141  |
| St. James ..         | 377                                | ...  | ...  | 078  | 409   | 3203  | 5994  | 16  | 63   | 11181 | ...           | ... | ... | ... | 3   | 0   | 0   | 1   | 0   | 24    | ...                | ...       | 22                            | 4037            | 240        | 10         | 230  |
| St. Mary ..          | ...                                | ...  | ...  | ...  | 4009  | 2521  | 4103  | 94  | 313  | 12104 | ...           | ... | ... | ... | 10  | 6   | 0   | 0   | 6   | 32    | ...                | ...       | 23                            | 4090            | 292        | 19         | 271  |
| St. Jean-Baptiste .. | ...                                | ...  | ...  | ...  | 1090  | ...   | 4124  | 54  | 15   | 5290  | ...           | ... | ... | ... | 1   | ... | 8   | 1   | 1   | 11    | ...                | ...       | 16                            | 6087            | 230        | 8          | 292  |
| Hochelega ..         | ...                                | ...  | ...  | ...  | 612   | ...   | 2975  | 10  | 63   | 3681  | ...           | ... | ... | ... | ... | ... | 7   | 1   | 2   | 10    | ...                | ...       | 22                            | 2934            | 131        | 1          | 130  |
| St. Gabriel ..       | 112                                | ...  | ...  | ...  | 300   | 10    | 5721  | 58  | 52   | 4234  | ...           | ... | ... | ... | ... | ... | 7   | ... | 2   | 14    | ...                | ...       | 4                             | 5186            | 404        | ...        | 404  |
| Total ..             | 500                                | 3036 | 1606 | 4602 | 27570 | 18437 | 32522 | 937 | 1053 | 84815 | ...           | 31  | 1   | 3   | 63  | 33  | 29  | 20  | 74  | 360   | 73                 | 78        | 276                           | 47310           | 2439       | 119        | 2303 |

| WARDS.             | MAIN PIPES |       |      |      |        |        |       |        |        |      |       |         |    |    |    | LEAD<br>W.P.M. | TOTAL | Pub. Priv. | Total |     |     |     |     |     |     |       |    |     |       |      |     |       |      |      |
|--------------------|------------|-------|------|------|--------|--------|-------|--------|--------|------|-------|---------|----|----|----|----------------|-------|------------|-------|-----|-----|-----|-----|-----|-----|-------|----|-----|-------|------|-----|-------|------|------|
|                    | 30         | 24    | 20   | 16   | 12     | 10     | 8     | 6      | 4      | 3    | 1 1/2 | PIPE    |    |    |    |                |       |            |       |     |     |     |     |     |     |       |    |     |       |      |     |       |      |      |
|                    |            |       |      |      |        |        |       |        |        |      |       | 30      | 24 | 20 | 16 |                |       |            |       | 12  | 10  | 8   | 6   | 4   | 3   | 1 1/2 |    |     |       |      |     |       |      |      |
| East .....         |            |       |      |      | 2178   | 5899   | 775   | 2446   | 6349   | 715  | 50    | 18446   |    |    |    |                |       |            |       |     |     | 3   | 9   | 5   | 14  | 33    | 2  | 84  | 45    | 1    | 519 |       |      |      |
| Center.....        |            | 1411  | 3    |      | 2374   | 8658   | 52    | 5503   | 6575   | 161  | 25    | 17772   |    |    |    |                |       |            |       |     |     | 4   | 8   | 4   | 16  | 31    | 7  | 74  | 81    | 4    | 637 |       |      |      |
| West .....         |            | 1496  |      | 654  | 2078   | 7716   | 1062  | 5751   | 6928   | 585  |       | 27316   |    |    |    |                |       |            |       |     |     |     |     | 1   | 19  | 8     | 37 | 40  | 18    | 108  | 54  | 833   |      |      |
| St. Ann .....      |            | 4716  | 279  | 256  | 19143  | 22217  | 5584  | 20274  | 40549  | 53   |       | 123079  |    |    |    |                |       |            |       |     |     | 4   | 1   | 22  | 32  | 28    | 71 | 117 | 3     | 1    | 284 | 244   | 10   | 4107 |
| St. Antoine .....  | 1351       | 5492  | 3803 | 4660 | 62163  | 15036  | 7779  | 44043  | 163979 | 523  | 392   | 245201  |    |    |    |                |       |            |       |     |     | 7   | 4   | 8   | 99  | 58    | 56 | 115 | 237   | 5    | 567 | 406   | 7    | 7854 |
| St. Lawrence ..... | 2140       | 4015  |      |      | 17324  | 6827   | 4721  | 24013  | 22410  |      |       | 61452   |    |    |    |                |       |            |       |     |     | 1   | 3   |     | 26  | 16    | 25 | 61  | 70    | 1    | 307 | 144   |      | 4484 |
| St. Louis .....    | 1645       | 36    |      |      | 12864  | 12147  | 3174  | 21199  | 22705  |      |       | 83171   |    |    |    |                |       |            |       |     |     |     |     | 24  | 30  | 21    | 44 | 80  |       | 179  | 169 | 2     | 4283 |      |
| St. James .....    | 2855       | 7564  | 4350 | 1074 | 13871  | 8615   | 6814  | 28274  | 36478  | 60   |       | 103564  |    |    |    |                |       |            |       |     |     | 3   | 1   | 24  | 16  | 22    | 79 | 87  |       | 232  | 188 | 6     | 6643 |      |
| St. Mary .....     | 2683       |       |      | 100  | 17772  | 14099  | 5717  | 47812  | 82249  |      |       | 127900  |    |    |    |                |       |            |       |     |     | 1   | 4   | 1   | 30  | 24    | 14 | 113 | 86    | 1    | 276 | 313   |      | 6911 |
| St. Jean-Baptiste  |            | 3700  |      |      | 18044  | 384    | 7364  | 20907  | 15     |      |       | 47744   |    |    |    |                |       |            |       |     |     |     |     |     | 17  | 11    | 41 | 2   |       | 71   | 107 |       | 3620 |      |
| Hochelaga .....    |            | 3175  |      |      | 7415   | 7226   | 3926  | 13978  | 16040  |      |       | 61884   |    |    |    |                |       |            |       |     |     |     |     | 9   | 9   | 30    | 37 | 1   | 79    | 84   |     | 1374  |      |      |
| St. Gabriel .....  | 112        |       |      |      | 498    | 38     | 4907  | 7407   | 511    |      |       | 15039   |    |    |    |                |       |            |       |     |     |     |     |     |     |       |    |     | 4     |      |     | 1182  |      |      |
| Total .....        | 10698      | 30762 | 8436 | 5744 | 171122 | 102320 | 54748 | 243782 | 314050 | 2095 | 507   | 948201  |    |    |    |                |       | 4          | 38    | 610 | 291 | 169 | 306 | 613 | 811 | 33    |    | 1   | 13184 | 1718 | 39  | 42847 |      |      |
| Rising main .....  | 1611       | 2     | 2709 |      | 1674   |        | 15    |        |        |      |       | 45500   |    |    |    |                |       |            |       |     |     |     |     |     |     |       |    |     | 2     |      |     |       |      |      |
| Exhibition Gr'ds   |            |       |      |      |        |        |       |        | 5474   |      |       | 5484    |    |    |    |                |       |            |       |     |     |     |     |     |     |       |    |     |       |      |     |       |      |      |
| Ord. Trk. R'y Pt   |            |       |      |      |        |        |       |        |        |      |       |         |    |    |    |                |       |            |       |     |     |     |     |     |     |       |    |     |       |      |     |       |      |      |
| St. Charles ..     |            |       |      |      |        |        |       | 7737   | 1861   |      |       | 9589    |    |    |    |                |       |            |       |     |     |     |     |     |     |       |    |     |       |      |     |       |      |      |
| Grand Total ..     | 2684       | 69411 | 8436 | 6744 | 179796 | 102320 | 54748 | 252514 | 321    | 2095 | 507   | 1096783 |    |    |    |                |       | 17         | 47    | 611 | 291 | 169 | 517 | 2   | 614 | 38    |    | 1   | 12286 | 1732 | 58  | 42863 |      |      |

SCHEDULE No 14.—MAIN PIPES, HYDRANTS AND VALVES ABANDONNED IN 1891.

| STREETS         | WARD.     | MAIN PIPES |     |    |     |    | VALVES. |     |    |    |       | Hydrants. | IN WHAT LOCALITY OF STREETS, PIPES WERE ABANDONED. |
|-----------------|-----------|------------|-----|----|-----|----|---------|-----|----|----|-------|-----------|--|
|                 |           | 12"        | 14" | 6" | 10" | 4" | 12"     | 10" | 8" | 5" | 4"    |           |  |
|                 |           |            |     |    |     |    | Total   |     |    |    | Total |           |  |
| Fr. Jean        | East      |            |     | 21 |     |    | 21      |     |    |    |       | 3         | All of Pripoune.                                   |
| Chapdel Mars    |           |            |     |    |     |    | 1300    |     |    |    |       | 4         | All of Champ-de-Mars                               |
| St Paul         |           |            |     |    |     |    |         |     |    |    |       |           |  |
| St. Louis       | Center    |            |     |    |     |    |         |     |    |    |       |           | South of St. Paul                                  |
| St. Mary        | St. Ann   |            |     |    |     |    | 170     |     |    |    |       | 1         | From Chaboulez Sq. to Dupré lane.                  |
| Colborne        |           |            |     |    |     |    | 400     |     |    |    |       | 1         | From Wellington to Notre-Dame.                     |
| M. Tracy        |           |            |     |    |     |    | 41      |     |    |    |       | 4         | " William to Notre Dame.                           |
| Chaboulez       |           |            |     |    |     |    | 1800    |     |    |    |       | 2         | " Chaboulez Street to McGill                       |
| St. Charles     |           |            |     |    |     |    | 37      |     |    |    |       | 1         | " Square to College                                |
| St. Jean        |           |            |     |    |     |    | 400     |     |    |    |       | 1         | Above Wellington.                                  |
| St. Denis       |           |            |     |    |     |    |         |     |    |    |       | 1         |  |
| St. Jean Bte    |           |            |     |    |     |    | 1400    |     |    |    |       | 1         | From Duluth Av. to Mount Royal Avenue.             |
| St. Mary        |           |            |     |    |     |    | 2100    |     |    |    |       | 1         | All of that part of Mignonne.                      |
| Parthenais      |           |            |     |    |     |    | 1650    |     |    |    |       | 1         | Fr. Mignonne to Ontario in '90 f. N.D. to Mign.    |
| Lafontaine      |           |            |     |    |     |    | 146     |     |    |    |       | 1         | At Dufréne street.                                 |
| Plessais        |           |            |     |    |     |    | 3850    |     |    |    |       | 3         | From Dorchester to Sherbrooke.                     |
| Beaudry         |           |            |     |    |     |    | 3400    |     |    |    |       | 4         | " below Sherbrooke.                                |
| Visitation      |           |            |     |    |     |    |         |     |    |    |       | 1         |  |
| Sherbrooke      | St. James |            |     |    |     |    | 1700    |     |    |    |       | 2         | All in that ward.                                  |
| Mignonne        |           |            |     |    |     |    | 2140    |     |    |    |       | 3         | "  |
| St. André       |           |            |     |    |     |    | 2320    |     |    |    |       | 4         | From St. Catherine to Sherbrooke.                  |
| Rousseau        |           |            |     |    |     |    | 300     |     |    |    |       |           |  |
| Jacques-Cartier |           |            |     |    |     |    | 2430    |     |    |    |       | 3         | All of Rousseau street.                            |
| Amberst         |           |            |     |    |     |    |         |     |    |    |       | 1         | From St. Catherine to Sherbrooke.                  |
| Maple           |           |            |     |    |     |    |         |     |    |    |       | 1         |  |
| Lagauchetière   |           |            |     |    |     |    |         |     |    |    |       | 1         |  |
| Sherbrooke      | St. Louis |            |     |    |     |    | 1420    |     |    |    |       |           |  |
| St. Dominique   |           |            |     |    |     |    | 70      |     |    |    |       | 2         | All in that ward.                                  |
| St. Hypolite    |           |            |     |    |     |    | 43      |     |    |    |       | 1         | At Sherbrooke street.                              |
| Cadieux         |           |            |     |    |     |    |         |     |    |    |       | 1         | "  |
| Banguinet       |           |            |     |    |     |    | 40      |     |    |    |       | 1         | "  |
| Leval           |           |            |     |    |     |    | 210     |     |    |    |       | 1         | From Albina to Roy.                                |
| Prince Arthur   |           |            |     |    |     |    | 380     |     |    |    |       | 1         | From Albina to Ernest street.                      |
| Dorchester      |           |            |     |    |     |    | 775     |     |    |    |       | 1         | All in that ward                                   |



No. 15 SCHEDULE SHOWING THE AVERAGE PRESSURE IN CITY MAINS DURING THE YEAR 1891.

| MONTHS       | FIRE STATIONS  |                 |                                      |                                       |   |   |                                  |   |                                   |  |                                 |                                   |  |                                    |                                     |                                  |  |                   | AVERAGE SURFACE OF WATER IN MONTWISH RESERVOIR. |        |
|--------------|--|-----------------|--------------------------------------|---------------------------------------|---|---|----------------------------------|---|-----------------------------------|--|---------------------------------|-----------------------------------|--|------------------------------------|-------------------------------------|----------------------------------|--|-------------------|---|--------|
|              | At W. W. Shop<br>Engine House direct<br>cor. St. Louis Bldg. | St. Louis Bldg. | Fire Station No. 1<br>Wellington St. | Fire Station No. 2<br>St. Louis Bldg. | Fire Station No. 3<br>St. Catherine St. | Fire Station No. 4<br>St. Catherine St. | Fire Station No. 5<br>Centre St. | Fire Station No. 6<br>St. Catherine St. | Fire Station No. 7<br>Ontario St. | Fire Station No. 8<br>Dalouville Bldg. | Fire Station No. 9<br>Craig St. | Fire Station No. 10<br>Centre St. | Fire Station No. 11<br>St. Catherine St. | Fire Station No. 12<br>Ontario St. | Fire Station No. 13<br>Belgrave St. | Fire Station No. 14<br>Dewey St. | Fire Station No. 15<br>St. Dominique St. | St. Gabriel Ward. | Average   |        |
| January      | 42.00  | 32.00           | 57.00                                | 57.00                                 | 27.00                                   | 70.00                                   | 66.00                            | 70.00                                   | 48.00                             | 36.00                                  | 44.00                           | 1.50                              | 70.00                                    | 36.00                              | 44.00                               | 1.50                             | 70.00                                    | 36.00             | 44.00   | 205.00 |
| February     | 65   | 72              | 67                                   | 67                                    | 70                                      | 70                                      | 65                               | 65                                      | 68                                | 71                                     | 83                              | 30                                | 66                                       | 77                                 | 73                                  | 113                              | 79                                       | 304.53            | 304.53  |        |
| March        | 70   | 72              | 68                                   | 68                                    | 70                                      | 70                                      | 65                               | 65                                      | 69                                | 71                                     | 83                              | 30                                | 66                                       | 77                                 | 73                                  | 113                              | 79                                       | 304.53            | 304.53  |        |
| April        | 70   | 72              | 67                                   | 67                                    | 70                                      | 70                                      | 65                               | 65                                      | 69                                | 71                                     | 83                              | 30                                | 66                                       | 77                                 | 73                                  | 113                              | 79                                       | 304.53            | 304.53  |        |
| May          | 70   | 72              | 67                                   | 67                                    | 70                                      | 70                                      | 65                               | 65                                      | 69                                | 71                                     | 83                              | 30                                | 66                                       | 77                                 | 73                                  | 113                              | 79                                       | 304.53            | 304.53  |        |
| June         | 70   | 72              | 67                                   | 67                                    | 70                                      | 70                                      | 65                               | 65                                      | 69                                | 71                                     | 83                              | 30                                | 66                                       | 77                                 | 73                                  | 113                              | 79                                       | 304.53            | 304.53  |        |
| July         | 70   | 72              | 67                                   | 67                                    | 70                                      | 70                                      | 65                               | 65                                      | 69                                | 71                                     | 83                              | 30                                | 66                                       | 77                                 | 73                                  | 113                              | 79                                       | 304.53            | 304.53  |        |
| August       | 70   | 72              | 67                                   | 67                                    | 70                                      | 70                                      | 65                               | 65                                      | 69                                | 71                                     | 83                              | 30                                | 66                                       | 77                                 | 73                                  | 113                              | 79                                       | 304.53            | 304.53  |        |
| September    | 70   | 72              | 67                                   | 67                                    | 70                                      | 70                                      | 65                               | 65                                      | 69                                | 71                                     | 83                              | 30                                | 66                                       | 77                                 | 73                                  | 113                              | 79                                       | 304.53            | 304.53  |        |
| October      | 70   | 72              | 67                                   | 67                                    | 70                                      | 70                                      | 65                               | 65                                      | 69                                | 71                                     | 83                              | 30                                | 66                                       | 77                                 | 73                                  | 113                              | 79                                       | 304.53            | 304.53  |        |
| November     | 70   | 72              | 67                                   | 67                                    | 70                                      | 70                                      | 65                               | 65                                      | 69                                | 71                                     | 83                              | 30                                | 66                                       | 77                                 | 73                                  | 113                              | 79                                       | 304.53            | 304.53  |        |
| December     | 70   | 72              | 67                                   | 67                                    | 70                                      | 70                                      | 65                               | 65                                      | 69                                | 71                                     | 83                              | 30                                | 66                                       | 77                                 | 73                                  | 113                              | 79                                       | 304.53            | 304.53  |        |
| Average 1891 | 68.5   | 72.5            | 67                                   | 67                                    | 70                                      | 70                                      | 65                               | 65                                      | 69                                | 71                                     | 83                              | 30                                | 66                                       | 77                                 | 73                                  | 113                              | 79                                       | 304.53            | 304.53  |        |
| do 1890      | 65.00  | 72.00           | 69                                   | 69                                    | 77                                      | 78                                      | 65                               | 65                                      | 67                                | 70                                     | 77                              | 30                                | 66                                       | 74                                 | 70                                  | 111                              | 76                                       | 303.03            | 303.03  |        |

**SCHEDULE SHOWING THE POSITION OF PUBLIC FOUNTAINS ERECTED IN  
THE CITY OF MONTREAL, UP TO JANUARY 1892.**

| LOCATION.   | Cast Iron Basins. | Stone and Cement<br>Basin. | Stone Fountains. | Cast Iron<br>Fountains. | Wood<br>Fountains. | Cast Iron<br>Drinking Troughs. | Number of Jets. |
|---|-------------------|----------------------------|------------------|-------------------------|--------------------|--------------------------------|-----------------|
| Ball Square.....                                  |                   |                            |                  | 1                       |                    |                                | 1               |
| Park .....  | 1                 |                            |                  | 1                       |                    |                                | 2               |
| and Dorchester.....                               |                   |                            | 1                |                         |                    |                                | 1               |
| St. Urs Market .....                              |                   |                            |                  |                         |                    |                                | 2               |
| St. Louis Square.....                             |                   |                            |                  |                         |                    | 1                              | 2               |
| St. Louis Square.....                             |                   |                            |                  | 2                       |                    |                                | 6               |
| at Flour Shed.....                                |                   |                            |                  | 1                       |                    | 1                              | 2               |
| St. Louis Square .....                            | 2                 | 1                          | 2                |                         |                    |                                | 5               |
| Victoria Square.....                              |                   |                            | 1                |                         |                    |                                | 2               |
| opposite Drill Hall .....                         |                   |                            |                  | 1                       |                    | 1                              | 1               |
| House Square .....                                |                   |                            |                  | 1                       |                    | 1                              | 1               |
| er at Dominion Square.....                        |                   |                            |                  | 1                       |                    | 1                              | 1               |
| Square .....                                      |                   |                            |                  | 1                       |                    | 1                              | 1               |
| near Notre Dame.....                              |                   |                            |                  | 1                       |                    | 1                              | 1               |
| St. Louis and St. Lawrence.....                   |                   |                            |                  | 1                       |                    | 1                              | 1               |
| Cartier Square and St. Paul... .                  | 1                 |                            |                  | 1                       |                    | 1                              | 5               |
| at Hay Market .....                               |                   |                            |                  |                         |                    | 1                              | 1               |
| St. Louis street, opposite Réservoir.....         |                   |                            |                  | 1                       |                    |                                | 1               |
| St. Louis and Common .....                        |                   |                            | 1                |                         |                    | 1                              | 2               |
| St. Louis, at Waste Weir. ....                    |                   |                            |                  |                         | 1                  | 1                              | 2               |
| Royal Avenue.....                                 |                   |                            |                  |                         |                    | 1                              | 1               |
| St. Louis me near Huisseau Migeon.....            |                   |                            |                  |                         |                    | 1                              | 1               |
| St. Louis me and Suzanne.....                     |                   |                            |                  | 1                       |                    | 1                              | 1               |
| opposite Reformatory grounds.....                 |                   |                            |                  |                         | 1                  | 1                              | 2               |
| St. Louis and Champlain .....                     |                   |                            |                  |                         |                    | 1                              | 2               |
| corner Dalhousie.....                             |                   |                            |                  |                         |                    | 1                              | 2               |
| St. Louis, north of Sherbrooke.....               |                   |                            |                  |                         | 1                  | 1                              | 2               |
| St. Louis Square.....                             |                   | 1                          |                  |                         | 1                  | 1                              | 3               |
| St. Louis avenue and St. Jean-Baptiste.....       |                   |                            |                  |                         |                    | 1                              | 2               |
| St. Louis Square .....                            |                   |                            |                  | 1                       |                    |                                | 1               |
| St. Louis Square and St. Catherine.....           |                   |                            |                  |                         |                    | 1                              | 1               |
| St. Louis James, removed to W. Park Oct 1891..... |                   |                            |                  |                         |                    |                                |                 |
| St. Louis and Common .....                        |                   |                            |                  | 1                       |                    | 1                              | 2               |
| St. Louis and Champlain.....                      |                   |                            |                  | 1                       |                    | 1                              | 2               |
| St. Louis d Square .....                          |                   |                            |                  | 1                       |                    | 1                              | 1               |
| St. Louis s and William.....                      |                   |                            |                  | 1                       |                    | 1                              | 1               |
| St. Louis ke, near Drummond .....                 |                   | 1                          |                  |                         |                    | 1                              | 2               |
| St. Louis ke, corner Guy.....                     |                   |                            |                  |                         |                    | 1                              | 1               |
| St. Louis Market .....                            |                   |                            |                  |                         | 2                  |                                | 2               |
| St. Louis ne Market .....                         |                   |                            |                  | 1                       |                    | 1                              | 2               |
| St. Louis rine and Western Park .....             |                   |                            |                  |                         |                    | 1                              | 2               |
| St. Louis rine and Delorimier.....                |                   |                            |                  |                         | 1                  | 1                              | 2               |
| St. Louis el Market.....                          |                   |                            |                  |                         | 1                  | 1                              | 2               |

## No. 16.—SCHEDULE.—Continued.

| No. | LOCATION.<br><br>Distributed along the Wharves | Road Watering<br>Nozzles. | Cast Iron<br>Fountains. | Wood<br>Fountains. | Cattle<br>Water Troughs. | Urinals. | Number of Jets. |
|-----|--|---------------------------|-------------------------|--------------------|--------------------------|----------|-----------------|
|     |  |                           |                         |                    |                          |          |                 |
| 1   | Wind-Mill Point .....                          |                           | 6                       | 1                  | 1                        | 1        | 3               |
| 2   | Allan's Wharf .....                            |                           | 1                       |                    |                          | 1        | 2               |
| 3   | Allan's Sheds .....                            |                           |                         |                    | 1                        |          | 2               |
| 4   | Custom House (opposite) .....                  |                           |                         |                    |                          | 1        | 2               |
| 5   | King's Basin .....                             |                           | 1                       |                    |                          |          | 1               |
| 6   | Dominion Line .....                            |                           |                         |                    | 1                        | 1        | 3               |
| 7   | Jacques Cartier Square (foot of) .....         |                           | 1                       |                    |                          |          | 1               |
| 8   | St. Gabriel street (foot of) .....             | 1                         |                         |                    |                          |          | 1               |
| 9   | St. Helen's Island Ferry .....                 |                           |                         |                    |                          |          | 1               |
| 10  | Beaver Line .....                              |                           |                         | 1                  | 1                        | 1        | 3               |
| 11  | Donaldson Line, foot of Grant street ..        |                           |                         |                    |                          | 1        | 1               |
| 12  | Commissioners, east of Barrack .....           | 1                         |                         |                    |                          |          | 1               |
| 13  | Longueuil Ferry .....                          |                           |                         |                    |                          | 1        | 2               |
| 14  | Marlborough street (foot of) .....             |                           |                         |                    |                          | 1        | 2               |
| 15  | Desery street (foot of) .....                  |                           |                         |                    |                          | 1        | 2               |
| 12  | Gale street (west of) .....                    |                           |                         |                    |                          | —        | —               |



| No. |             | 12" 10" 8" 6" 4" 3" |     |     |     |     |    |
|-----|-------------|---------------------|-----|-----|-----|-----|----|
|     |             | 12"                 | 10" | 8"  | 6"  | 4"  | 3" |
|     |             | 369                 | 47  | 120 | 21  | 267 |    |
|     |             |                     | 4   | 8   | 13  | 3   |    |
|     |             | 11                  | 44  | 51  | 37  | 3   |    |
|     |             | 11                  | 13  | 37  | 12  | 17  |    |
|     |             | 11                  | 26  | 51  | 164 | 138 | 7  |
|     |             | 8                   | 10  | 12  | 17  | 14  |    |
|     |             | 3                   | 19  | 22  | 17  | 28  |    |
|     |             | 15                  | 29  | 5   | 13  | 18  |    |
|     |             | 5                   | 6   |     |     |     |    |
|     |             | 10                  | 3   | 45  |     |     |    |
| 44  | St. Louis   |                     |     |     |     |     |    |
| 45  | St. Patrick |                     |     |     |     |     |    |
| 46  | St. Patrick |                     |     |     |     |     |    |
| 47  | St. Patrick |                     |     |     |     |     |    |
| 48  | St. Thomas  |                     |     |     |     |     |    |
| 49  | Victoria    |                     |     |     |     |     |    |
| 50  | Victoria    |                     |     |     |     |     |    |
| 51  | Viger       |                     |     |     |     |     |    |
| 52  | Viger       |                     |     |     |     |     |    |
| 53  | Viger       |                     |     |     |     |     |    |
| 54  | Viger       |                     |     |     |     |     |    |
| 55  | Wellington  |                     |     |     |     |     |    |
| 56  | Wellington  |                     |     |     |     |     |    |
| 57  | Wellington  |                     |     |     |     |     |    |
| 58  | St. Paul    |                     |     |     |     |     |    |
| 59  | Dallas      |                     |     |     |     |     |    |

| No. |  | 12x12 12x10 12x8 12x6 12x4 |       |      |           |
|-----|--|----------------------------|-------|------|-----------|
|     |  | 12x12                      | 12x10 | 12x8 | 12x6 12x4 |
|     |  | 3                          | 5     | 14   | 11 32 2   |

| No. |  | 12x12 12x10 12x8 |       |      |
|-----|--|------------------|-------|------|
|     |  | 12x12            | 12x10 | 12x8 |
|     |  | 3                | 5     | 14   |
|     |  | 37               | 12    | 12   |

| No. |  | 12x12 12x10 12x8 |       |      |
|-----|--|------------------|-------|------|
|     |  | 12x12            | 12x10 | 12x8 |
|     |  | 3                | 5     | 14   |
|     |  | 37               | 12    | 12   |

| No. |  | 12x12 12x10 12x8 |       |      |
|-----|--|------------------|-------|------|
|     |  | 12x12            | 12x10 | 12x8 |
|     |  | 3                | 5     | 14   |
|     |  | 37               | 12    | 12   |

SCHEDULE No. 17.—*Continued.*

## BREECHES PIPES.

|  | 30x30 | 30x24 | 20x20 | 12x12 | 10x10 | 8x8 | 6x6 |  |
|--|-------|-------|-------|-------|-------|-----|-----|--|
|  | 2     | 1     | 1     | 1     | 2     | 8   | 7   |  |

|                             |     |                              |     |
|-----------------------------|-----|------------------------------|-----|
| New hydrants (5 noz.).....  | 7   | Street water nozels (brass). | 593 |
| Cast iron fender posts..... | 11  | “ “ “ (iron) ..              | 3   |
| Pieces for lengthening hy-  |     | Hydrant nozels .....         | 37  |
| drant.....                  | 6   | Assorted spindles.....       | 59  |
| Assorted valve covers.....  | 134 | Rods for stop-cocks assorted | 78  |
| Hydrants already used ..... | 7   |                              |     |

|                              |     |   |        |
|------------------------------|-----|---|--------|
| 1" pneumatic valves.....     | 8   | 2" iron pipe (in feet) .....              | 125    |
| $\frac{3}{4}$ " " " .....    | 12  | $1\frac{1}{2}$ " " " .....                | 23     |
| $\frac{1}{2}$ " " " .....    | 139 | 1" " " .....                              | 1792   |
| 2 way pneumatic valves....   | 22  | 17 Rolls 1" lead pipe, weight.            | 3,009  |
| 3 " " " .....                | 26  | 58 " $\frac{5}{8}$ " " " .....            | 8,700  |
| 4 " " " .....                | 17  | 474 " $\frac{1}{2}$ " " " .....           | 73,470 |
| $\frac{3}{4}$ " " " .....    | 11  | Lead (pig) in lbs. ....                   | 44,000 |
| $\frac{1}{2}$ " " " .....    | 18  | Tin (ingot) in lbs.....                   | 100    |
| 1" nozels .....              | 4   | $\frac{3}{8}$ " copper tubing in lbs..... | 100    |
| $\frac{1}{2}$ " " .....      | 69  | 4" iron boxes assorted.....               | 38     |
| 1" x $\frac{5}{8}$ T's.....  | 58  | Footpath plates complete....              | 1394   |
| $\frac{3}{8}$ Y's.....       | 3   | Cast iron caps for tubs boxes             | 100    |
| Assorted covers for boxes... | 498 |   |        |

|                            |         |    |
|----------------------------|---------|----|
| ..... repairing banks..... | 42 26   |    |
| .....                      | 94 84   |    |
| .....                      | 6023 40 |    |
| .....                      | 600 00  |    |
| .....                      | 390 01  |    |
| .....                      | 643 75  |    |
| .....                      | 26 00   |    |
| .....                      | 28 14   | 88 |
|                            |         |    |

### V 1551 HOUSE.

|                              |         |    |
|------------------------------|---------|----|
| .....                        | 3650 00 |    |
| .....                        | 216 23  |    |
| .....                        | 257 49  |    |
| .....                        | 313 19  |    |
| .....                        | 67 93   |    |
| .....                        | 761 33  |    |
| ..... fire extinguisher..... | 59 00   |    |
| .....                        | 20 00   |    |
| .....                        | 67 20   | 54 |
|                              |         |    |

### 22. 155 HOUSE.

|                          |          |  |
|--------------------------|----------|--|
| .....                    | 316 47   |  |
| .....                    | 264 27   |  |
| ..... boiler houses..... | 139 86   |  |
| .....                    | 3750 00  |  |
| .....                    | 5085 51  |  |
| .....                    | 10630 95 |  |

## TAILED STATEMENT OF EXPENDITURE, &amp;c.—Continued.

|                                      | \$    | c. | \$    | c. |
|--------------------------------------|-------|----|-------|----|
| Brought forward.....                 |       |    | 35803 | 94 |
| TAIL RACE.                           |       |    |       |    |
| ing tail race bridge .....           | 24121 | 34 |       |    |
| to banks.....                        | 116   | 46 |       |    |
| fences.....                          | 21    | 45 |       |    |
| furnish water to Ramsay estate ..... | 180   | 60 | 24439 | 85 |
| PIPE TRACK.                          |       |    |       |    |
| to valves.....                       | 72    | 30 |       |    |
| .....                                | 135   | 35 | 207   | 65 |
| RESERVOIRS.                          |       |    |       |    |
| n McTavish reservoir .....           | 400   | 00 |       |    |
| an High Level.....                   | 593   | 60 |       |    |
| h, repairs .....                     | 86    | 32 |       |    |
| ng snow.....                         | 15    | 67 |       |    |
| .....                                | 316   | 34 |       |    |
| .....                                | 24    | 22 |       |    |
| ouse .....                           | 20    | 60 |       |    |
| to buildings.....                    | 9     | 90 |       |    |
| l light.....                         | 240   | 27 |       |    |
| nd shanty . .....                    | 13    | 58 |       |    |
| ; H. L. res. and pointing masonry.   | 96    | 58 |       |    |
| ne service .....                     | 13    | 00 |       |    |
| .....                                | 171   | 37 | 2001  | 45 |
| NOINE HOUSE HIGH LEVEL.              |       |    |       |    |
| n's salary.....                      | 500   | 00 |       |    |
| .....                                | 1391  | 78 |       |    |
| Engine.....                          | 3188  | 56 |       |    |
| .....                                | 299   | 54 |       |    |
| to buildings &c.....                 | 127   | 28 |       |    |
| tools &c. ....                       | 2     | 00 |       |    |
| nd telephone.....                    | 34    | 93 |       |    |
| ig machinery and sundries.....       | 264   | 25 | 5808  | 34 |
| Carried over.....                    |       |    | 68261 | 23 |

DETAILED STATEMENT OF EXPENDITURE, &c.—*Continued.*

|  | \$    | c. | \$     |     |
|--|-------|----|--------|-----|
| Brought forward.....   |       |    | 68     | 61  |
| WORK SHOP ON LAGAUCHETIÈRE STREET.                               |       |    |        |     |
| Wages .....  | 14212 | 32 |        |     |
| Iron, spikes &c.....   | 409   | 38 |        |     |
| Rent of foreman's house .....                                    | 200   | 00 |        |     |
| Telephone service.....   | 123   | 74 |        |     |
| Fuel and light.....  | 860   | 73 |        |     |
| Fences .....   | 290   | 32 |        |     |
| Painting roofs.....  | 36    | 69 |        |     |
| Double windows.....  | 34    | 01 | 1616   | 9 1 |
|  |       |    |        |     |
| DISTRIBUTION PIPES.  |       |    |        |     |
| Repairs to mains, sewer and valves ; wages.                      | 24061 | 80 |        |     |
| Thawing pipes and carting water.....                             | 1235  | 14 |        |     |
| Inspecting service pipes inside houses.....                      | 6171  | 50 |        |     |
| Dress for inspectors.....  | 499   | 65 |        |     |
| Repairs to footpaths and service boxes;wages                     | 2852  | 38 |        |     |
| Material, iron castings, lead, tin &c.....                       | 454   | 67 |        |     |
| do wood, planks, nails &c.....                                   | 332   | 95 |        |     |
| do briks, cement, sand, drain pipes &c                           | 184   | 24 | 35792  | 33  |
|  |       |    |        |     |
| METER DEPARTMENT.  |       |    |        |     |
| Meter inspectors and car fare.....                               | 2473  | 85 |        |     |
| Testing, placing and repairing.....                              | 2066  | 94 |        |     |
| New meters.....  | 6052  | 74 |        |     |
| Repairs to building .....  | 8     | 71 | 10602  | 2   |
|  |       |    |        |     |
| PUBLIC FOUNTAINS.  |       |    |        |     |
| Repairing ; wages.....   | 1467  | 57 |        |     |
| do materials .....   | 116   | 56 |        |     |
| Painting.....  | 160   | 73 |        |     |
| New troughs and drinking fountains.....                          | 122   | 98 |        |     |
| Removing Place d'Armes fountain to St.<br>Catherine street ..... | 534   | 27 | 2402   |     |
|  |       |    |        |     |
| Carried over.....  |       |    | 133227 |     |

## DETAILED STATEMENT OF EXPENDITURE, &amp;c.—Continued.

|                                 | \$   | c. | \$     | c. | \$      | c. |
|---------------------------------|------|----|--------|----|---------|----|
| Brought forward.....            |      |    | 133227 | 10 |         |    |
| HYDRANTS.                       |      |    |        |    |         |    |
| pecting; wages.....             | 8085 | 37 |        |    |         |    |
| pairing; do and materials...    | 4214 | 84 |        |    |         |    |
| owing; horses and laborers...   | 1010 | 71 |        |    |         |    |
| t of tap house in St. J. B. w'd | 128  | 00 |        |    |         |    |
| l for do do do                  | 56   | 63 |        |    |         |    |
| vehicles for boilers.....       | 720  | 00 |        |    |         |    |
| nting .....                     | 145  | 20 | 14360  | 75 |         |    |
| MISCELLANEOUS.                  |      |    |        |    |         |    |
| tingencies for office.....      | 605  | 58 |        |    |         |    |
| er analysis.....                | 2855 | 34 |        |    |         |    |
| sekeep superintendent. ....     | 400  | 00 |        |    |         |    |
| do foreman .....                | 350  | 00 |        |    |         |    |
| ages .....                      | 1534 | 72 |        |    |         |    |
| ool taxes and assessments.....  | 546  | 82 | 6492   | 46 |         |    |
| STAFF.                          |      |    |        |    |         |    |
| erintendent.....                | 3500 | 00 |        |    |         |    |
| stant superintendent.....       | 2000 | 00 |        |    |         |    |
| ountant.....                    | 1200 | 00 |        |    |         |    |
| ughtsman.....                   | 1000 | 00 |        |    |         |    |
| erk and secretary.....          | 900  | 00 |        |    |         |    |
| do and chief inspector.....     | 900  | 00 |        |    |         |    |
| do .....                        | 624  | 00 | 10124  | 00 | 164704  | 31 |
| UNFORSEEN.                      |      |    |        |    |         |    |
| sistant to accountant.....      |      |    |        |    | 312     | 00 |
| Carried over.....               |      |    |        |    | 164,515 | 31 |

## DETAILED STATEMENT OF EXPENDITURE, &amp;c.—Continued.

|  | \$     | c. | \$     | c. | \$     | c. | \$     | c.           |
|--|--------|----|--------|----|--------|----|--------|--------------|
| Brought forward ..                         |        |    |        |    | 164816 | 31 |        |              |
| LOANS.                                     |        |    |        |    |        |    |        |              |
| PIPE LAYING.                               |        |    |        |    |        |    |        |              |
| Wages.....                                 | 138448 | 48 |        |    |        |    |        |              |
| Tin and lead.....                          | 10612  | 36 |        |    |        |    |        |              |
| Lead pipes.....                            | 11703  | 86 |        |    |        |    |        |              |
| Copper, brass works..                      | 7218   | 24 |        |    |        |    |        |              |
| Timber.....                                | 3101   | 24 |        |    |        |    |        |              |
| Brick, sand clay....                       | 2398   | 36 |        |    |        |    |        |              |
| Drain pipes.....                           | 866    | 31 |        |    |        |    |        |              |
| Special castings.....                      | 41022  | 91 |        |    |        |    |        |              |
| Cement.....                                | 542    | 74 |        |    |        |    |        |              |
| Iron.....                                  | 2483   | 99 |        |    |        |    |        |              |
| Tools, patterns.....                       | 4377   | 32 |        |    |        |    |        |              |
| Packing.....                               | 451    | 77 |        |    |        |    |        |              |
| Iron pipes.....                            | 1140   | 66 |        |    |        |    |        |              |
| Cast iron pipes.....                       | 120201 | 18 |        |    |        |    |        |              |
| Sundries.....                              | 1756   | 34 |        |    |        |    |        |              |
| Rock excavation in<br>St. J. Bte ward..... | 290    | 50 |        |    |        |    |        |              |
| Carting pipes.....                         | 5538   | 52 |        |    |        |    |        |              |
| Coal .....                                 | 1099   | 58 |        |    |        |    |        |              |
| Repairing streets.....                     | 770    | 35 |        |    |        |    |        |              |
| Steam pump.....                            | 156    | 00 |        |    |        |    |        |              |
| Culvert under G. T.<br>r'y track .....     | 42     | 18 | 354222 | 89 |        |    |        |              |
| New boiler for H. L.<br>engine .....       |        |    |        |    | 4517   | 09 | 358739 | 98 523256 29 |

## SCHEDULE No. 19.

**Dwellings, stores, shops, offices, warehouses, manufactories, hotels, &c.. in  
the City of Montreal, for year 1891-92 with assessed water rates thereon.**

## DWELLINGS ;

| Rate. | Assessed. | Tenanted. | Vacant. | Rate. | Assessed. | Tenanted. | Vacant. | Rate.  | Assessed. | Tenanted. | Vacant. |
|-------|-----------|-----------|---------|-------|-----------|-----------|---------|--------|-----------|-----------|---------|
| \$    |           |           |         | \$    |           |           |         | \$     |           |           |         |
| 5 00  | 1678      | 1587      | 91      |       | 38695     | 37281     | 1414    |        | 41228     | 37721     | 1493    |
| 5 75  | 3616      | 3490      | 126     | 23 00 | 27        | 25        | 2       | 44 00  | 85        | 85        |         |
| 6 50  | 5038      | 4860      | 170     | 23 75 | 225       | 216       | 9       | 44 75  | 5         | 5         |         |
| 7 25  | 6450      | 6292      | 168     | 24 50 | 6         | 6         |         | 46 25  | 1         | 1         |         |
| 8 00  | 4599      | 4468      | 131     | 25 25 | 545       | 536       | 9       | 47 75  | 123       | 118       | 5       |
| 8 75  | 3868      | 3745      | 123     | 26 00 | 5         | 5         |         | 51 50  | 66        | 65        | 1       |
| 9 50  | 1273      | 1228      | 45      | 26 75 | 239       | 225       | 14      | 55 25  | 85        | 83        | 2       |
| 10 25 | 2805      | 2702      | 103     | 27 50 | 10        | 9         | 1       | 56 75  |           | 1         |         |
| 11 00 | 345       | 321       | 24      | 28 25 | 147       | 138       | 9       | 59 00  | 55        | 55        |         |
| 11 75 | 2094      | 2009      | 85      | 29 00 | 179       | 175       | 4       | 62 75  | 60        | 60        |         |
| 12 50 | 534       | 507       | 27      | 29 75 | 182       | 177       | 5       | 66 50  | 6         | 6         |         |
| 13 25 | 1115      | 1064      | 51      | 30 50 | 2         | 2         |         | 70 25  | 24        | 24        |         |
| 14 00 | 1274      | 1206      | 68      | 31 25 | 87        | 84        | 3       | 77 75  | 26        | 26        |         |
| 14 75 | 657       | 624       | 33      | 32 75 | 357       | 350       | 7       | 85 25  | 7         | 7         |         |
| 15 50 | 163       | 153       | 10      | 33 50 |           |           |         | 92 75  | 22        | 22        |         |
| 16 25 | 684       | 662       | 22      | 34 25 | 81        | 79        | 2       | 100 25 | 4         | 4         |         |
| 17 00 | 90        | 83        | 7       | 35 00 | 5         | 5         |         | 107 75 | 10        | 10        |         |
| 17 75 | 743       | 693       | 50      | 35 75 | 30        | 29        | 1       | 115 25 | 2         | 2         |         |
| 18 50 | 235       | 230       | 5       | 36 50 | 185       | 175       | 10      | 122 75 | 3         | 3         |         |
| 19 25 | 357       | 328       | 29      | 37 25 | 19        | 19        |         | 130 25 | 1         | 1         |         |
| 20 00 | 117       | 108       | 9       | 38 75 | 12        | 12        |         | 137 75 | 4         | 4         |         |
| 20 75 | 378       | 366       | 12      | 40 25 | 185       | 182       | 3       | 152 75 | 1         | 1         |         |
| 21 50 | 253       | 243       | 10      | 41 75 | 3         | 3         |         | 377 75 | 1         | 1         |         |
| 22 25 | 329       | 314       | 15      | 43 25 | 2         | 2         |         |        |           |           |         |
|       | 38695     | 37281     | 1414    |       | 41228     | 39721     | 1493    |        | 41820     | 40319     | 1501    |



[illegible]

## SCHEDULE No. 19.—Continued.

| Horses. |       | Cows. |       | Stalls. |       | Urinals. |       | Water closets. |       |
|---------|-------|-------|-------|---------|-------|----------|-------|----------------|-------|
| No.     | Rate. | No.   | Rate. | No.     | Rate. | No.      | Rate. | No.            | Rate. |
|         | \$    |       | \$    |         | \$    |          | \$    |                | \$    |
| 7166    | 2 00  | 1102  | 1 00  | 374     | 1 00  | 809      | 1 00  | 856            | 2 00  |
|         |       |       |       | 267     | 2 00  | 29       | 1 50  | 237            | 3 00  |
|         |       |       |       |         |       | 53       | 3 00  | 10199          | 4 00  |
|         |       |       |       |         |       | 19       | 15 00 | 13             | 15 00 |
| 7166    |       | 1102  |       | 641     |       | 910      |       | 11305          |       |

## SPECIAL RATES.

| Bakeries. |       | Beer bottlers. |       | Fountains. |       | Steam engines. |                 |                 | Sundries. |        |
|-----------|-------|----------------|-------|------------|-------|----------------|-----------------|-----------------|-----------|--------|
| No.       | Rate. | No.            | Rate. | No.        | Rate. | No.            | Horse power     | Total.          | No.       | Rate.  |
|           | \$    |                | \$    |            | \$    |                |                 |                 |           |        |
| 2         | 3 00  | 7              | 3 00  | 10         | 3 00  | 3              | $\frac{1}{2}$   | 1 $\frac{1}{2}$ | 11        | 5 00   |
| 14        | 5 00  | 4              | 5 00  | 2          | 4 00  | 13             | 1               | 13              | 19        | 6 00   |
| 2         | 6 00  | 1              | 6 00  | 21         | 5 00  | .....          | .....           | .....           | 1         | 7 00   |
| 3         | 7 00  | 1              | 8 00  | 2          | 7 00  | 15             | 2               | 30              | .....     | 8 00   |
| 3         | 8 00  | 3              | 10 00 | 1          | 9 00  | .....          | .....           | .....           | 11        | 10 00  |
| .....     | 9 00  | 1              | 12 00 | 4          | 10 00 | 6              | 3               | 18              | 2         | 15 00  |
| 14        | 10 00 | 1              | 15 00 | 1          | 11 00 | 10             | 4               | 40              | 1         | 17 00  |
| 4         | 12 00 | 1              | 17 00 | 1          | 12 00 | .....          | .....           | .....           | 1         | 20 00  |
| 1         | 14 00 | .....          | ..... | 1          | 17 00 | 9              | 5               | 45              | 1         | 21 00  |
| 10        | 15 00 | .....          | ..... | 1          | 26 00 | 3              | 6               | 18              | 1         | 25 00  |
| 1         | 17 00 | .....          | ..... | .....      | ..... | 8              | 7               | 56              | 1         | 30 00  |
| 3         | 18 00 | .....          | ..... | .....      | ..... | 2              | 8               | 16              | 1         | 50 00  |
| 4         | 20 00 | .....          | ..... | .....      | ..... | 1              | 8 $\frac{1}{2}$ | 8 $\frac{1}{2}$ | 1         | 750 00 |
| 1         | 23 00 | .....          | ..... | .....      | ..... | 2              | 9               | 18              |           |        |
| 1         | 25 00 | .....          | ..... | .....      | ..... | 3              | 10              | 30              |           |        |
| 1         | 27 00 | .....          | ..... | .....      | ..... | 1              | 11              | 11              |           |        |
| 3         | 30 00 | .....          | ..... | .....      | ..... | 1              | 12              | 12              |           |        |
| .....     | ..... | .....          | ..... | .....      | ..... | 2              | 14              | 28              |           |        |
| .....     | ..... | .....          | ..... | .....      | ..... | 2              | 15              | 30              |           |        |
| .....     | ..... | .....          | ..... | .....      | ..... | 1              | 16              | 16              |           |        |
| .....     | ..... | .....          | ..... | .....      | ..... | 6              | 20              | 120             |           |        |
| .....     | ..... | .....          | ..... | .....      | ..... | 1              | 25              | 25              |           |        |
| .....     | ..... | .....          | ..... | .....      | ..... | 1              | 30              | 30              |           |        |
| .....     | ..... | .....          | ..... | .....      | ..... | 1              | 34              | 34              |           |        |
| .....     | ..... | .....          | ..... | .....      | ..... | 1              | 50              | 50              |           |        |
| 67        |       | 19             |       | 44         |       | 92             |                 | 650             | 51        |        |

**ANALYSES**  
**OF THE**  
**WATER SUPPLY**  
**OF THE**  
**CITY OF MONTREAL.**

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**NOTICE**

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As the reports on Water analysis, by Drs. Wyatt Johnston, R. P. Ruttan and by Prof. C. A. Püster are not yet ready to be sent to the printer and to be included in the publication of this report, notice is hereby given that the above reports will be printed in a few weeks in a separate pamphlet.

★M. N. Baker

# ANNUAL REPORT

OF THE

## SUPERINTENDENT

OF THE

# **Montreal Water Works**

FOR THE

YEAR ENDING 31st DECEMBER 1892

PRINTED BY ORDER OF THE WATER COMMITTEE.



11/6/93  
"Water"

**Montreal**  
EUSÈBE SENÉCAL & FILS, PRINTERS,  
20, ST. VINCENT STREET

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1893







## IV

both by water and steam, also the condition of all buildings, Reservoirs, etc., and the report of my inspection to the Committee is herein contained with all other reports made to the Water Committee, during the five months of my administration viz: from August 1st 1892 till December 31st 1892. It will be noticed that I have recommended a number of changes and improvements to be made, in order to place the Department in an adequate position to meet the emergencies and rapid daily increase in the consumption of water—the remodelling of the City both in its sanitary and commercial improvements, which is increasing its population so rapidly, that the Water Department have to set to work quickly, in order to follow the other Departments who are progressing with their share of the improvements.

### 1. AQUEDUCT.

The retaining angle wall at the entrance of the Aqueduct needs very extensive repairs, I recommend the purchase of three acres of the water front from the opening of the Aqueduct west, so that it may be fenced in from the public highway, and that an additional angle wall be built out in the river to divert the water that sweeps the river shore from Lachine down, from passing into the Aqueduct and turn it passed the end of the present retaining wall down the river, a very extensive system of ditches to carry surface water away and to prevent the farms along the line of the Aqueduct from being damaged by water during heavy rainfall, particularly spring and fall. All the bridges crossing the Aqueduct require repairs, viz: 12, 13, 14, 15 should be renewed with iron girders at once, and all the others should also be replaced by iron girders, say two per annum after the first four have been renewed. The pier of the Stone Bridge now standing in the middle of the Aqueduct should be removed at once. An independent suction pipe from the Aqueduct to Wells of Pumping Engines should be connected from the outside of the settling pond, in order that the settling pond can be shut off for cleaning or repairs, or in the event of an accident to the banks as retaining wall to tail race. All shrubs, grass and trees should be cut away clean except a line of trees on the line of the fence. The riprap lining all along the aqueduct, should be thoroughly repaired.

### 2. LOW LEVEL PUMPING STATION WORKS.

No. 1. Turbine is in a fair condition of repair so that little expense was incurred on repairs of this Turbine and pumping connections.

No. 2. The old breast wheel was so seriously out of repair and being so old the iron framing is crystalised to a dangerous extent

and the rim of wheel much cracked. The flume gates are useless. The retaining wall at the flume gates is so deteriorated that it was no longer safe to run the wheel, and after the report of the Chief Engineer Mr. Kearney, this wheel was stopped and condemned. I have made estimate to renew it by placing an improved turbine wheel with a double set of horizontal Worthington Pumps.

No. 3. Turbine wheel is in fair condition of repair, only the pumps are of the oldest type and require frequent repairs. It is not safe or economical to run and should be replaced by an improved first-class pump.

No. 4. Turbine wheel is likewise in fair order but of an old wasteful type and should be renewed by improved model. The wheel-house foundation and building are much in need of extensive repairs. The settling pond should be cleaned and cemented all over to facilitate the cleaning by a centre drain pipe to the Tail Race.

Steam Engine No. 1 worked well and has performed very heavy duty on account of the very early closing down of all the pumping turbines from the cause of extensive cold—the sudden increase of consumption of water—rendering the necessity of running both engines Nos. 1 and 3 night and day constantly. Very little repairs have been done to this engine. No. 3 Engine also worked well with very little repairs. But these engines, two in all are inadequate to meet with any break down or emergency of any serious nature. I have, as my predecessor has before me, recommended that an additional 10,000 000 gallon engine be purchased at once and erected on the foundation along side of the present No. 1, being of same type so as to keep a perfect uniformity of all the pumping machinery, seeing that we have in the two pumping engines the best reputed type in the market and have given a first-class result, in fact more quantity of water pumped per 24 hours than their guarantee. I have also recommended a new battery of three Heine's boilers to replace the oldest battery of old Lancashire boilers which are no longer economical to run as they are condemned to a low pressure of 40 lbs to the square inch on account of their age and worn out condition. The other boilers the battery of Heine's are first-class. The No. 2 Lancashire Battery will last for a few years longer when assisted by a new battery of Heine's. The Boiler House needs alterations and extensive repairs. The engine houses are in need of repairs also the coal shed needs repairs. A new drain pipe was put in from No. 3 Engine to draw away all the shut off valve pits to the tunnel of the No. 1 Engine drain. The grounds are in fair condition but they should be improved as to making them more ornamental. The employees' dwellings should be repaired and improved.

### 3. MACHINE SHOP AND BRASS FOUNDRY.

The machine shop should be removed to the point of land at back of dwellings and remodelled and made into proper work shops so that all the material required to be turned into machine work could be all done by our own men thus saving a considerable amount and keeping a regular staff of men profitably employed constantly, from which staff of men could be promoted to all positions in the Department.

The work turned out during the year from the present shop is as follows :

#### NEW WORK DONE IN MACHINE SHOP AT WHEEL HOUSE, 1892.

|      |  |
|------|--|
| 217  | New 5 nozels hydrants.                               |
| 1    | " 3 " "  |
| 1    | " 2 " "  |
| 1    | 5 nozels hydrant seat.                               |
| 3    | 8 " hydrant seats.                                   |
| 7    | hydrant top nuts and 6 washers.                      |
| 48   | " watering noz.                                      |
| 79   | 4 valves.  |
| 74   | 8 "  |
| 43   | 10 "   |
| 64   | 12 "   |
| 1    | stuffing box for 4" valve.                           |
| 17   | 4" valve spindles                                    |
| 15   | 6" " "   |
| 12   | 8" " "   |
| 15   | 10" " "  |
| 15   | 12" " "  |
| 1    | 30" " "  |
| 3    | packing screws.                                      |
| 14   | 1" pneumatic stop cocks.                             |
| 167  | $\frac{1}{8}$ " " "                                  |
| 1659 | $\frac{1}{4}$ " " "                                  |
| 372  | $\frac{1}{2}$ " 2 way branches.                      |
| 177  | $\frac{1}{2}$ " 3 " "                                |
| 70   | $\frac{1}{2}$ " " "                                  |
| 5333 | Union couplings. }                                   |
| 5939 | Tube caps. }   |
| 5518 | Pointed ends. }                                      |
| 3174 | Round " }  |
| 3114 | Square " }   |
| 500  | Nipples for pneumatic stop cocks.                    |
| 40   | $\frac{1}{2}$ " x $\frac{5}{8}$ " reducing couplings |
| 75   | $\frac{1}{2}$ " Nozels.                              |

## VII

|      |   |
|------|---|
| 2172 | $\frac{5}{8}$ " Nozles.                                   |
| 131  | 1" "  |
| 159  | 1" couplings.   |
| 34   | $\frac{5}{8}$ " "   |
| 125  | $\frac{1}{2}$ " stops cocks, old kind.                    |
| 87   | $\frac{5}{8}$ " " " "                                     |
| 1    | 1 $\frac{3}{8}$ " steel spindle for foot valve Eng No. 1. |
| 1    | Hydraulic press handle, for press house.                  |
| 179  | Brass wire springs. H. L. P. Station.                     |
| 2    | Rimmers.  |
| 1    | Tap and 2 1" bolts.                                       |
| 2    | $\frac{3}{4}$ " Eye bolts.                                |
| 1    | Steel washer for main pipe drill.                         |

### REPAIRS DONE TO.

|  |                                      |
|--|--------------------------------------|
| 11   | Hydrants.                            |
| 5  | 4" valve.                            |
| 3  | 6" "                                 |
| 2  | 10" "                                |
| 31   | Fire irons.                          |
| 1  | Fan gear. H. L. P. Station.          |
| 1  | Air pump bucket and discharge valve. |
| 2  | Foothpath augers.                    |
| 92   | Pick axes.                           |
| 26,650 lbs of brass castings delivered from foundry during the year. |                                      |

The report of Mr. Kearney Chief Engineer in charge of Low Level Station shows all details of works etc. The amount of water pumped during the year by steam and water is shown by schedule No. 5

### 4. TAIL RACE.

The bank has given away on west side and requires considerable repairs. A good deal of crib work will have to be made and filled with stone to prevent this back from filling in Tail Race in time so that these repairs should be done as quickly as possible.

### 5. PIPE TRACK AND MAIN.

The schedule shows that mains that have been laid and the intention is to connect the circuit on the high level mains passing through the principal streets of the high part of the city, and on which high pressure main will be connected to fire hydrants only except in the high level of the City, above the low level Reservoir

### 3. MAINS

The main of dwellings that all the be all done keeping a r which staff ment.

The work follows :

#### New work

|      |           |
|------|-----------|
| 217  | New       |
| 1    | "         |
| 1    | "         |
| 1    | 5 no.     |
| 8    | 8 "       |
| 7    | h v       |
| 48   |           |
| 79   | 4         |
| 74   | 8         |
| 48   | :         |
| 64   | 1         |
| 1    | sti       |
| 17   | 4" val    |
| 15   | 6"        |
| 12   | 8"        |
| 15   | 10"       |
| 15   | 12"       |
| 1    | 30"       |
| 3    | parki     |
| 14   | 1" p m    |
| 167  | 1"        |
| 1659 | 1"        |
| 372  | 1" 2      |
| 177  | 1" 3      |
| 70   | 1"        |
| 5333 | Union     |
| 5939 | Tube      |
| 5518 | Pointed   |
| 3174 | Round     |
| 3114 | Square    |
| 500  | Nipples   |
| 40   | 1" x 1/2" |
| 75   | 1" No.    |

the principal part of the City in case of fire.

30 and 24 inch double rising main to be placed in a tunnel so that they in case of accident the tunnel This of course could be done granted for this purpose yearly This tunnel should be con- an extra main of 40 inch as it size of the present ones in a few of Tavish Reservoir to High Level enabled in time to meet emer- and all be improved as they are put out of repair the new ones shall be expense of breaking the pipes to remove them for repairs etc.

### RESERVOIRS.

requires extensive repairs. The cross pressure of ice and leaks at the rate per hour. The top layer of stone coping semi sectional crib work will have to be part of the wall. The walls need repairs on the face. The grounds require to be off valves and valve house require High Level Reservoir requires the wire pannel fence is much needed of the public from throwing in all of the water being polluted by dead bodies and lowering them at for two watchmen should be that this reservoir would be well as by day.

### LEVEL SERVICE.

such in need of repair The large work but needs repairs and some engine is useless as it can only press not to the upper reservoir. I that a duplicate engine the same as a proper engine house be erected to present small engine can be sold to are in good order only the smoke they should be altered and improved. should be erected as the present

2

coal shed is too small and should be built so as to feed the coal to boilers, all with a direct view to economy, and to me the required emergency of both increase of consumption of water and in case of the break down of the large engine.

## 8. PIPE LAYING.

The total length of cast iron pipes laid during 1892 is 70,977 feet equal to 13.544 miles, the weight of metal being 3,012.51 tons. The different sizes of pipes laid, their lengths and weights, and the number of valves of different sizes put in are as follows :

| Sizes.     | Length in feet. | Weight in tons. | Number of valves. |
|------------|-----------------|-----------------|-------------------|
| 30         | .....           | .....           | 1                 |
| 24         | 2496            | 307.54          | 2                 |
| 20         | 4575            | 430.87          | 4                 |
| 16         | 2050            | 139.60          | 2                 |
| 12         | 25401           | 1145.31         | 60                |
| 10         | 13994           | 435.26          | 38                |
| 8          | 20125           | 520.08          | 63                |
| 6          | 1183            | 21.04           | 15                |
| 4          | 1153            | 12.81           | 70                |
| Total..... | 70,977          | 3012.51         | 255               |

## 9. NEW HYDRANTS Etc.

|   |       |
|---|-------|
| New 5 nozels hydrants put in during 1892.....           | 143   |
| “ 2 “ “ “ “ “ .....                                     | 7     |
|   | <hr/> |
| Total.....  | 150   |
| Total 5 nozels hydrants in position up to January 1893. | 584   |
| “ 3 “ “ “ “ “ ..  | 70    |
| “ 2 “ “ “ “ “ “ ..                                      | 537   |
| Total hydrants (including old pattern) .....            | 1875  |
| Private hydrants.....                                   | 49    |
|   | <hr/> |
| Total.....  | 1924  |
| Hydrants found frozen in 1892.....                      | 2326  |

## SERVICE PIPES TO HOUSES.

|                                 |      |
|---------------------------------|------|
| Brass cocks laid in 1892.....   | 539  |
| Air cocks       “       “ ..... | 1801 |
|                                 | -    |
| Total services laid.....        | 2340 |



**Length of lead pipe, in fact, for service laid in 1892. 45784**

**PIPES AND VALVES LAID UP TO JANUARY, 1893.**

|  | Pipes.                            | Valves   |
|--|-----------------------------------|--|
| 30"  | 28,800                            | 18   |
| 24"  | 60,907                            | 49   |
| 20"  | 13,010                            | 10   |
| 16"  | 8,794                             | 13   |
| 12   | 198,197                           | 353  |
| 10   | 116,326                           | 227  |
| 8  | 84,873                            | 271  |
| 6  | 253,697                           | 630  |
| 4  | 322,554                           | 884  |
| 3"   | 2,095                             | 38   |
| <b>Total.</b>                                  | <b>1,077,253</b>                  | <b>2493</b>                                      |
| <b>Useless pipes left<br/>in ground.. ....</b> | <b>30,056</b>                     | <b>Useless valves left<br/>in ground..... 37</b> |
| <b>Total to jan. 1893.</b>                     | <b>1,047,197 or 198.33 miles.</b> | <b>2456</b>                                      |

**9. MAINTENANCE OF DISTRIBUTION AND SERVICE  
PIPES, HYDRANTS AND PUBLIC FOUNTAINS.**

The report of foreman Legace together with schedule No. 9 gives full details of work under the above heading said reports and tables may be found in appendix.

The most serious break was that of the 30 inch main pipe on Centre and Atwater Avenue near low level station it having burst from the top and split open. The pattern for this class of pipe has been improved and strengthening strips have been added to the body of pipe to prevent a recurrence of such an accident.

**10. CONSUMPTION OF WATER.**

The quantity of water pumped during the year is 5,284,245,431 gallons or a daily average of 14 477 384 gallons an increase of 84,577, gallons daily over 1891. Average water pumped by water wheels per day 9,678,539 gallons average water pumped by steam pumping engine per day 4,798,566 gallons No. 5a tableau shows all averages.

**12 ADMINISTRATION.**

Schedule 16 gives the details of the year's expenditure for main-

## XI

tenance as well as for permanent improvements, the former amounts to \$155,250.85 the latter amounts to \$347,408.59 taken from loans and is principally for pipe laying.

### 13. GENERAL REMARKS.

The regulations in the administration of the department have been changed with a view to give a more efficient working of the offices and a clearer record of the registering of all the documents received both for the Water Committee and for the correct management of the department as the register for the finding of the Service Cocks was so incomplete that a very large number of these had to be dug out when water was to be shut off or turn on. It became necessary to renumber every service and find the direct location by a rule of measurement from corners of streets and from face of houses, this being all properly indicated on a sectional new map for that purpose along with location of all the shut off valves in existence. When this is complete the key book to all these services will be handed to the staff for their guidance thus saving much time in finding any valves or service cock particularly in winter when they are all covered by snow and ice. A full set of sectional maps will also be made showing the exact positions of all water pipes, size of same and valves thereto. The general map will then be completed for office use and guidance of the officers and Committee of the department.

I have the honor to be, Gentlemen,

Your obedient servant,

A. DAVIS,

*Supt. M. W. W*

## XII

### REPORTS OF THE SUPERINTENDENT OF M. W. W. TO THE WATER COMMITTEE.

---

*To the*

*Chairman and Members of the Water Committee.*

GENTLEMEN,

I beg to submit for your information, the following :

Immediately after my appointment, I started to make an inspection of the department, and to order an inventory of all the material, tools, etc., also to inspect all buildings, machinery, engines, water wheels, aqueduct, reservoirs etc.

*Hochelaga office.*—Starting at east end of City, I found at Hochelaga, in the market and fire station building, a telephone and two employees, one a turn cock and one man. Both are very little employed.

*Shop, St. Jean-Baptiste Ward.*—I found a little patched up shed, at St. Jean-Baptiste, kept fairly clean but altogether insufficient to keep valuable materials in, and to perform the necessary work required. It is much exposed to fire and not at all fit for what it is used for.

*Shop, Lagauchetière street.*—The main shop at corner St. Chas. Borommée, is neatly kept, such as it is, but such a large amount of valuable property in the way of material of all kind, should have proper buildings and yard room. This place is simply a nest of all kind, huddled up together, with all manners of patched up sheds, all of which are in a dangerous non-systematical principle. More ground should be purchased at once, before the vacant lot west of this property is sold to others. It should be secured and proper buildings erected to keep the property of the department in proper and methodical order, which would save the cost in one year. In the present condition no proper method or system can be established for economy and safety.

*Shop, Point St. Charles.*—I found the testing shed with tool shed and material yard at Point St. Charles, very much in the same condition. Here we have plenty of ground room, but all buildings are simply temporary sheds. The testing shed is badly fitted up, without system. A proper weighing scale should be erected on the ground, adjoining the testing press, to prevent the large amount of cartage to the weighing house, which is a distance of more than a mile away, thus expending a large amount for extra men and cartage.

rs are in fair order. The  
done. I am preparing a  
do the work satisfactorily.  
The boilers, two in number,  
efficient draught artificially,  
The smoke boxes and smoke  
small, and badly designed,  
altered and remodelled to  
and needs repairs and repaint-

st be made to make this engine  
The boiler house is in a bad  
rebricked, etc. The fence about  
res repairs to prevent the pro-

all buildings are in a deplorable  
instances. they are in danger of  
the machine shop and boiler  
s. 1 and 3 Worthington engines  
ground that are in a fair state of  
d of system. The turbine that  
wheel, that was removed, is of the  
ult : it is in bad order and vibra-  
which will cause a serious accident  
pumps worked by number 2 turbine,  
a bad order. The breast wheel is in  
neer is frightened to run it, as it  
could be stopped, it might burst  
ng the aqueduct into the Tail Race,  
ill. I recommend that this wheel  
remodelling of the foundations and  
ceive a new improved turbine and  
nished, the old number one can be  
corresponding one can be put in, not  
to prevent accidents. When this is  
d be used in summer, which will soon  
ing, which must be done soon.  
the necessary plans and estimates for  
will consent to this. I find that a sad  
ing the last Worthington pumping  
ation should have been lowered 10 feet,  
no power, as well as its wear and tear.  
in place of running it into the cham-

ilar engine is very urgent, as I find. by  
nters, steam pumping. that all the steam  
use at once, this for weeks at a time,

## XIV

hence an accident to one of these two engines would have left the City on a half supply, or possibly worse.

The boilers are in fair order, but of an old type, and very expensive on fuel. They also need improvement very much. The boiler house is badly constructed, and a wooden ceiling has been built close to the boilers, which I intend to remove as quickly as possible to prevent accident from fire, etc.

One of the cross bridges spanning the Tail Race at back of wheel house, caved in of its own weight. I had this repaired and improved in doing so. I found that all these cross sections must be removed, they are all in a dangerous state. Arches of stone or iron should have been made in the first place, but cedars were used as cross beams simply laid with 4 feet of earth on top. Three more arches will need repairs, if only of a temporary class, as the building will have to be widened in remodelling for new turbines.

The main drain running from No. 3 engine to Tail Race, became blocked, as it was too close to foundation of building, and in its course having to have a recess bend that would always become choked, leaving this important main shut off, valves submerged in water, so that this engine could not be started, under six or seven hours pumping, before this valve could be operated, and in winter exposed to be destroyed by ice. A new drain had to be made to connect with the main entrance valve, and run its course to lowest point in tunnel of No. 1 exhaust.

Much is needed in remodelling the shop and foundry at this place. I find that we are working both of these at a disadvantage and loss. First the building is wrongly situated, the foundry being at a long distance across the yard, apart from the main shop, is altogether wrong; all the work must be as closely concentrated as possible to work with advantage and with economy. The most of the castings are contracted for, and only a few things are made at a much higher rate in our foundry. We should do all our brass castings, or none at all. The machine shop also makes only a part of our need, this, like the foundry should be made more efficient to do all our repairs, except in very large special pieces; and we should do all this with a good result of both, saving and improving the service as well as creating a first class set of valuable men from the training we should give them. We should train boys that in time could fill any position.

*Meters.*—We have a meter testing apparatus that is very expensive, and we are obliged to pay largely for the repairs of meters. This meter testing and repairing should be all done at our main shop at the wheel house, thus first saving the large quantity of water used for testing, also the money paid for repairing, as the man who is employed to do this testing, should be able to do the repairs at the same time.

I found that we have no suction communicating at the back of

first flood gate. Should a break take place in retaining wall, we should be unable to give any supply for the aqueduct. This needs a large suction pipe put in across the settling pond to back of gates, to save the possibility of a disaster. I will make plans and estimates for this as soon as possible.

*Aqueduct.*—Visiting the whole of the aqueduct carefully, I find much of the rip-rap side lining is gone to the bottom, and in many places the banks washed away. A number of the wooden bridges are in bad order, two of them so bad as to require immediate attention to save damage.

A farmer named Dunn, has made a claim of \$200 for the damages caused to his farm from not having drained his farm. I have returned the claim to his solicitor, stating that we are in no ways concerned in the matter, as our ditches are made 12" lower than those on his farm.

I find we have one principal main stone culvert at the mouth of the old aqueduct caved in, in the centre of the canal. We shall have to repair this by constructing a coffer dam in the canal of old aqueduct. This will be costly before all the repairs are done.

I find that the crank pulleys to lift logs, on the principal flood gate, have been erected wrong, and are thus useless. They must all be re-erected to be of any use. I find the long cut wall and break water at entrance of aqueduct, in very bad order. In many places, the foundation timbers are running out, and the water is rushing now through the bottom of the cut wall, destroying by degrees. Also the whole of the coping planks are completely rotten away; this must be all renewed very soon, and a large amount of the bank clay filled into the cribs. I recommend that the City purchases the river front, the full length of our boom and a good fence be made. Also a cut wall of crib work to run out 60 feet to prevent the damages by wash, and to prevent the public from making use of the entrance of the water for any purposes, at this entrance.

*Valves.*—I find that all the valves, from the smallest to the largest have been made from the oldest type, and causing much useless expenses. When any valves have to be removed, the men have been in the habit of breaking the pipes next the valves, thus having to renew them in replacing valves. In future all valves shall be made with flanges, so that they can be put in and removed for repairs or otherwise, by simply disconnecting joints.

*Large Mains.*—In future all large connections will be made with the improved ribbed connections, which will prevent the possibility of bursting accidents at these points.

*Orders and Office Work.*—I had to reorganize this at once, as orders for material had been issued by a number of employees and no system really to record any work, or method for the conducting of affairs. Now all orders must be given only on one form, and

M  
The  
shop at  
water use  
man who  
repairs at  
I found

away.  
The  
numbered. 12  
there of

Nov. 3rd, 1892.

*the**Chairman and Members of the Water Committee.*

GENTLEMEN,

As it is absolutely necessary that we should look for an additional means of supplying the City with water over and above what we have now through the aqueduct, the increase of the City's consumption having run upwards of 4,000,000 gallons per day, necessitates the immediate serious consideration as to the best means to meet the demand in a practical manner.

I find by a number of reports that have been made from time to time by several outside engineers as well as the two late Superintendents of the department, the recommendation of increasing the capacity of the aqueduct by the two following systems: first, by widening the present aqueduct, or constructing a new one next to it. After studying the question carefully, I have come to the conclusion that I cannot recommend either of these plans from the fact that at the first, namely, the widening of the present aqueduct, is altogether impracticable, as the water that is now running through could not be disturbed, and rendered unfit for use during the operation, as there is no other supply to make use of.

As to a new and larger aqueduct to be constructed for the purpose of pumping the water from a numerous number of turbine wheels, I also consider like the last, impracticable, from the fact that it does not increase the head of water, it would only increase the volume whereby a more extensive water pumping power could be obtained during the open season only, but would not prevent the same necessity of depending on steam power during the winter season, which is caused both by high and low water. When the water is packed up in the tail race during the spring and fall to an incalculable height from the formation of the ice in the St. Lawrence, and from the breaking up of the same in the spring, also the lowering of the water in the aqueduct from extensive cold, such as we have this winter, and the extra formation of ice, likewise the formation of frazil that floats down in the aqueduct, would only be increased and create even a greater difficulty than at present, could either of the above system be carried out, as there is no known system to prevent this extraordinary formation which forms one of our serious difficulties with the water wheel system at this particular place, preventing all classes of water wheels from working. The facts being authentic from our practical experience of this winter, when on the 30th of January every turbine wheel had to be closed, or ceased working, caused by the water being so low in the aqueduct.



safety and health, and the cost is within the possibility of being carried out. We can establish a filtering system from our reservoir through our domestic service main, at a cost of about \$85.000 which will give a clean, healthy, domestic water, which becoming rapidly an absolute necessity that must be established sooner or later. I would also suggest that the amount necessary to carry out this system be granted as early as possible, and that this construction should be gone into gradually, so that we shall have the whole of our new system established within two years. This would allow ample time to reach the most improved machinery, likewise carrying out the whole of this undertaking in the most advantageous and economical manner.

The above respectfully submitted

A. DAVIS,  
Superintendent of M. W. W.

Nov. 3rd, 1892.

To the

*Chairman and Members of the Water Committee.*

GENTLEMEN.

I have been preparing for the last few weeks the means of emptying the aqueduct, in order that I might make thorough examination of the old breast wheel, and the flume gate thereto. Likewise the flume gates leading the water to the other three turbine wheels. Also the openings to the leaders for the suction of the other two steam pumps.

1. I beg to call your attention to the fact that in accordance with my first report regarding the old breast wheel and the breast wall, I found that it had been impossible to close the flume gates, from the fact that they were so badly rotted away, and the frames on which they are hinged and the facings of the same, are so distorted and wasted away, also being loose in their fastenings, that had we succeeded in closing them at any time during an emergency the whole fabric would likely have been carried away into the Tail Race. Consequently I have been obliged to lock the said gates with extra inner frames and facings with back bracing, in order that we may remove the old breast wheel, without interfering with the Settling Pond, and prepare the remodelling of the foundation to receive a new turbine wheel with pumps thereto, on the most improved system. This will result in a saving of at least 200% over and above the result of the ancient appliances.

When this is completed, it will be necessary to remodel the other two old turbines, as they are only wasting a very large volume of the water, and their construction being anything but proper. In case of accidents great difficulties would be experienced in removing any of the broken parts, as they have been built in the wall frame plates, piece by piece, and in the removing of the same, the whole fabric would be demolished before any of the parts in connection with the pumps could be taken out. This is a serious matter to which I trust you will give me your support in carrying out the immediate remodelling of this machinery.

I also beg to call your attention to the fact that the bottom of the Settling Pond is altogether unfit for the use it is calculated for, as there are no means of cleaning it. Hence, all the sediments are simply accumulated, until it will soon be level with the gates, and into the tunnels of our pumps.

I beg to suggest that you will allow me to make preparation for laying a new stone bottom properly cemented, with a centre escape pipe that could be opened from time to time, in order that the sediments may be washed out through the said pipe into the Tail Race, without interfering with the working of our machinery.

In order to do this, it will be necessary to construct a lock gate at the first bridge of the aqueduct, and build a leading canal around the present Settling Pond to the two pumping engines, so that we may during the remodelling, pump the water direct from the aqueduct.

I consider this matter very urgent, and I earnestly beg that the Committee will insist on getting the necessary amount granted by the Council, for the carrying out this work immediately.

I do not intend that this should be considered a part of my general report, which I propose making in January, as I find it will be necessary to revise a great many things in connection with the whole system of our department, when the appropriation for the the general outlay of the coming year, will be asked for.

In the meantime I desire to be authorised to remove the Breast Wheel and make preparations for the new turbines, at the earliest possible date.

The whole respectfully submitted,

A. DAVIS,

*Superintendent of M. W. W.*

CITY HALL  
Montreal, Nov. 3rd 1892. }

# APPENDIX.

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*REPORT of the Assistant-Superintendent of Water Works, on meters and house service inspection, for the year 1892.*

---

A. DAVIS, Esq.

*Supt. M. W. W.*

DEAR SIR,

I beg to submit my report on the operations of the meter and house service inspection branches of the water department for the year 1892.

METERS.

The number of meters in use at the end of the year was 739 including those at wheel-house. This is an addition of 37 to the number in use in 1891.

The city owns 678 of those in use and the other 61 belong to private individuals of business firms.

There were 90 new places metered and 72 meters that had been in use were discontinued.

There were 115 changes of meters made for various reasons, some being out of order, others too small, etc.

There were 12 meters damaged by frost. In these cases the damages were charged to the tenant, according to by-law, section 2 R. No. 82 holds them responsible for all damages to the instruments on their premises.

The department purchased during the year the following meters:

|   |   |   |   |                 |
|---|---|---|---|-----------------|
| 12 CROWN :  | { | 2 | — | 4 inches        |
|   |   | 1 | — | 3 “             |
|   |   | 4 | — | 2 “             |
|   |   | 5 | — | $\frac{1}{2}$ “ |
| 10 EMPIRE :   | { | 4 | — | 2 “             |
|   |   | 6 | — | 1 “             |
| There were also 4 crown metters purchased by private parties. |   |   |   |                 |
| 4 CROWN :   | { | 1 | — | 6 inches.       |
|   |   | 1 | — | 4               |
|   |   | 1 | — | 3               |
|   |   | 1 | — | 2               |

provision for new meters was  
 over run, so that the persons  
 themselves.

as the department has a better  
 and the rent charged is enough  
 cost and provide a fund for  
 out. Besides which the expen-  
 se of purchasing has a tendency  
 commencing the use of meters,  
 be the policy of the department,  
 stable than by the rental system.

at the harbour latrines have been  
 ive no revenue this being ordered

meters at the Low Level pumping  
 used at the steps of the turbines

and the previous year was distributed

|  | 1892<br>Millions of<br>Gallons. | 1891<br>Millions of<br>Gallons. |
|--|---------------------------------|---------------------------------|
| .....                                    | 179.75                          | 160.18                          |
| use at Ry and hotels.....                | 175.86                          | 168.97                          |
| street ry.....                           | 68.84                           | 101.45                          |
| .....                                    | 28.67                           | 26.05                           |
| .....                                    | 6.77                            | 7.04                            |
| .....                                    | 36.25                           | 37.72                           |
| .....                                    | 6.69                            | 6.96                            |
| .....                                    | 28.59                           | 26.59                           |
| as, livery stables, skating<br>tc.)..... | 31.85                           | 18.07                           |
| .....                                    | 109.48                          | 44.72                           |
| Totals.....                              | 672.75                          | 597.75                          |

se of 12½ per hundred in 1892 over 1891.

to 1892 :

**REPORT of the Assistant-Superintendent  
Works, on meters and house  
year 1892.**

**A. DAVIS, Esq.**

**Superintendent.**

**DEAR SIR,**

I beg to submit my report on  
house service inspection branch  
the year 1892.

MEASURES

The number of meters in use  
including those at wheel-houses  
number in use in 1891.

The city owns 678 of these  
private individuals of business.

There were 40 new places  
in use were installed.

There were 115 changes  
some being made in order of

There were 12 meters of  
damages were charged to  
2 R No 82 to be them resp.  
on their premises.

The department purchased

12 CROWN

10 EMPIRE

There were also 4

4 CROWN

Total.

347

368

312

297

305

331

370

426

468

508

544

589

616

670

693

702

739

to the year 1876,

per

different kinds and sizes  
were parties.

to 1000 GALLONS.

1000 gallons per day or  
36 cents per 1,000 galls  
1,000 to 2,000 gallons  
per day.

\$0.28

0.27

0.25

0.23

0.21

0.19

0.17

0.15

10,000 gallons per day

**JOINT INSPECTION.**

from January first to Novem  
ber were discharged and the

... was the discovery and stoppage of  
... as enumerated below, viz :

|             | 1892.   | Galls.<br>per<br>hour. |      | 1891.   | Galls.<br>per<br>hour. |
|-------------|---------|------------------------|------|---------|------------------------|
| 5009        | wasting | 63616                  | 4180 | wasting | 53227                  |
| 81          | "       | 1220                   | 61   | "       | 1148                   |
| 4523        | "       | 88797                  | 3334 | "       | 67606                  |
| 76          | "       | 1161                   | 68   | "       | 1045                   |
| 159         | "       | 3295                   | 189  | "       | 4623                   |
| 332         | "       | 4329                   | 382  | "       | 4607                   |
| 508         | "       | 11387                  | 373  | "       | 8252                   |
| 18          | "       | 100                    | 20   | "       | 307                    |
| ..... 822   | "       | 14991                  | 676  | "       | 12872                  |
| ..... 11528 | "       | 188896                 | 9283 |         | 153687                 |

... of 1892 over 1891 is 23 %, but considering the  
... employed in this inspection this year with  
... a diminution of 10 % on the number of galls. of

... irregularities were also found :—

|                                       |                               |
|---------------------------------------|-------------------------------|
| prevent freezing.....4                | wasting 150 gallons p. minute |
| flush drains.....8                    | " 190 " "                     |
| illegally for building purposes ..... | 29                            |
| hose illegally .....                  | 85                            |

... 601 sounds heard on service pipes.  
... the reports were made to the shop and repaired by  
... ment if the leak was in the street.  
... case of illegal use of water was arrested as soon as disco-

... number of prosecutions in the Recorder's court was 135  
... revenue from them was :—

|            |          |
|------------|----------|
| Fines..... | \$ 50.00 |
| Costs..... | 201.25   |
|            | <hr/>    |
|            | \$251.25 |

... inspection cost our department this year \$8,285.94.  
... re finishing this report I want to call your attention to the  
... ling figures.

|                              |            |
|------------------------------|------------|
| Expenses for inspection..... | \$8.285.94 |
| and fines etc., (only).....  | 251.25     |
| say 30% of the expenses..... |            |

I think we should either be more severe and consequently make prosecutions or raise the fines so as to cover a greater part of our expenses.

Out of 135 prosecutions we had this year before the Recorder's Court:

|     |                                    |        |
|-----|------------------------------------|--------|
| 102 | were charged only with costs ..... |        |
| 3   | " fined.....                       | \$5.00 |
| 8   | " " .....                          | 3.00   |
| 3   | " " .....                          | 2.00   |
| 5   | " " .....                          | 1.00   |
| 2   | " settled privately.....           |        |
| 6   | " withdrawn.....                   |        |
| 6   | sentence suspended.....            |        |

---

135

At section 25, reg. 65 we see that one infraction to our rules could be punished by a fine not exceeding \$20.00 and costs besides or two months imprisonment.

The consequence of this raising of fines will not be only the increase of revenue but the principal object will be to force people to take better care of all pipes connected with their buildings and diminish the enormous quantity of water wasted. The lost of water by negligence amount to about 30 % of the whole consumption, *in winter*.

#### COMPARISON OF METER RATES WITH RATES BASED ON ASSESSED RENTAL.

|  |               |
|--|---------------|
|  | Gallons.      |
| The total quantity of water pumped in 1892 was ..... | 5,075,609,693 |
| That bringing no direct revenue was :                |               |

|                                  |            |
|----------------------------------|------------|
| Flooding private rinks, etc..... | 1,623,287  |
| Fires.....                       | 11,952,000 |
| Watering streets .....           | 85,281,824 |
| Public fountains.....            | 47,606,400 |
| Harbour (approximately)....      | 14,000,000 |
| Steps of turbines.....           | 17,934,439 |

|            |            |
|------------|------------|
| Total..... | 178,397,95 |
|------------|------------|

|                                |             |
|--------------------------------|-------------|
| Balance producing revenue..... | 4,897,211,7 |
|--------------------------------|-------------|



That charged for at meter rates :

|                             |             |
|-----------------------------|-------------|
| Factories and engines.....  | 179,754,227 |
| Elevators.....              | 175,861,281 |
| Railways.....               | 68,840,957  |
| Schools, convents, etc..... | 28,667,239  |
| Hospitals and homes.....    | 6,769,798   |
| Hotels.....                 | 36,249,011  |
| Church organs.....          | 6,691,661   |
| Breweries.....              | 28,591,899  |
| Miscellaneous, etc.....     | 31,852,401  |
| Outside city limits.....    | 109,477,079 |

|            |             |
|------------|-------------|
| Total..... | 672,755,553 |
|------------|-------------|

|   |               |
|---|---------------|
| Balance being that charged for at rates<br>based on rental, special rates and<br>including waste..... | 4,224,456,190 |
|---|---------------|

The revenue from water in 1892 was :

That from metered water, including  
rent of meters.....\$132,508.50  
being at the averaged rate of 19 $\frac{3}{4}$  cts.  
per 1,000 gallons pumped.

That from rates based on rental and  
special charges .. .....\$528,860.69  
being at the rate of 12 $\frac{1}{2}$  cents per  
1,000 gallons pumped.

|   |               |
|---|---------------|
| Total water from which revenue is<br>derived..... | 4,897,211,743 |
|---|---------------|

Total revenue from assessed rate.....\$661,369.19  
being at the rate of 13 $\frac{1}{2}$  cents per  
1,000 gallons pumped.

|                          |               |
|--------------------------|---------------|
| Total water pumped ..... | 5,075,609,693 |
| “ revenue.....           | \$661,369.19  |

being at the rate of 13 $\frac{1}{2}$  cents per  
1,000 gallons pumped.

The monthly inspection and reading of all meters in use has been  
kept up as usual.

Your obedient servant,

J. O. A. LAFOREST,

CIVIL ENGINEER,

Ass. Supt, M. W. IV.

Ass. Supt's Office, }  
1st May 1893. }

## LOW LEVEL PUMPING STATION.

Jan. 4th 1893.

A. DAVIS, Esq.

*Superintendent Water Works.*

DEAR SIR,

My report for the year ending the 31st December 1892 is respectfully presented.

## No. 1 WHEEL HOUSE.

The repairs recommended in my last year's report were not carried out. The wooden sheeting of which the inside walls are composed requires to have portions of it renewed, also sections if not the whole flooring should be renewed. Portions of the skirting facing of the gallery are very much decayed, and should be renewed. The whole interior of the building should be painted, also the outside of the doors and windows. The stone lintel over the north door is cracked, I would recommend its being removed and replaced with a wooden one. The stone coping on the east side of the building is frost sprung, and some of the stones are broken, they should be put in their former good condition. The coil pipes for heating the building frequently give out, they should be renewed. The frost trapping in the wheel pit will require some repairs, and the roof should be painted.

## Nos 2, 3 &amp; 4 WHEEL HOUSES.

The repairs recommended to this building were not carried out. A section or the whole of the flooring requires renewing. All the windows and frames with the exception of the large one on the west side should be renewed. The sashes and frames of the existing ones, will not admit of their being handed without breaking the glass. The porches require to be renewed and the whole interior requires painting.

The stone foundation of this building is very leaky, letting the water from the wheel and tail race into the main tunnel and pump room to such an extent that it makes the filling up and pointing of the joints in the masonry an annual repair, as said filling and pointing is carried away in the spring when the ice is leaving. The rain and thaw water is making its way through the roof in several places, which should be remedied. The steam coil pipes like those of No. 1 Turbine House, are 18 years in use, and they should be renewed.

## THE MACHINE SHOP.

The floor of this building is very much worn, and it should certainly be renewed, also the stairs likewise. The large window frame and double window on the south end, should be renewed.

Nothing has been done to the extention before reported on, and appropriated for.

### No. 1 ENGINE HOUSE.

You kindly had some slight repairs done to the building, in the shape of patching the ceiling and other parts, also an inclosure around the wash-stand which has a neat appearance.

The whole interior of the building, office and work room should be painted and varnished. The oil cloth on the floor is very much worn and presents an unclean appearance. A portion of the sheet iron was blown off the roof, it was repaired. The man who repaired it reported the whole iron of the roof very much pitted, which is evidently correct as the water is making its way in, in several places, the sheet iron should be renewed, and also that of the work room attached. Some of the basement flooring will have to be renewed. You kindly furnished a number of oil drip pans, which have been found very serviceable. Series of cupboards should be built all round the work room, and oil room for the keeping out of sight, the various stores and other requirements.

### No. 3 ENGINE HOUSE.

This building requires painting. The stone steps at the front door should be repaired and all the outside wood work painted. That portion of the chimney of this building above the roof should be taken down, it being in an unsightly dilapidated condition, it serves no purpose and could be dispensed with. The roof should also be painted.

## THE BOILER HOUSES.

The boiler houses proper are in as good repair as buildings of their kind can reasonably be expected to be notwithstanding that the brick work in many places is sprung and separated, which has been the case for years, the repairing of which would require a very general pulling down. The outside wood work requires painting. The base of the chimney should be better protected from the water falling off the roof, a number of the bricks being *scaled*, which *scaled* bricks should be removed and replaced. The concrete covering of the smoke flue, in the rear of the boilers leading to the chimney outside of the building is very much broken up it should be recovered and a surface drain laid of the most permanent kind to conduct the surface water which unvoidably falls from the roof

of the boiler houses, on the covering of this flue. This is very important and should be attended to as early as possible in the spring, as the surface water is finding its way in under the Cornish boilers. That portion of the wooden tramway covering, attached to the front of the boiler houses, should be thoroughly repaired or renewed.

### THE COAL SHED.

This building is very much in need of painting. The roof is leaking in several places and it should be repaired or recovered. The brick work of the north end is considerably frost sprung, the top of the wall being about five inches out of plumb, and the stone retaining buttresses on the inside are in a tumble down condition. That section of the stone foundation on the east side should be pointed, and some other minor repairs. The Weigh House attached is also in a similar condition.

### THE DWELLINGS.

These buildings are in a wretched condition externally for want of painting, and their internal condition is not much better. Two of the occupants are asking for new kitchen floors, and some repairs to the plastering. The premises are in a very unsanitary condition, and the sheds in the rear require considerable repairs. The service and waste pipes are about 27 years old and as consequence are constantly giving out. The plumbers repairing them say they are worn out.

### THE BRASS FOUNDRY.

This building is in fairly good order. The cast iron chimney cap was blown off by the wind and broken, it should be replaced. There requires to be removed from within this building, a large accumulation that is no longer serviceable, being duplicate parts of the Breast Wheel that will not be required. The interior should be whitewashed.

### THE GROUNDS.

The work recommended in my last year's report was carried out, which consisted of the sodding of that portion of the slope between the Engine and Wheel Houses, and the placing of a new wooden stairs leading to No. 1 Engine House. A caving occurred on the road immediately in front of Nos. 2, 3 & 4 Wheel Houses, the timbers covering the Wheel race having given way. It was repaired by recovering the space with new timbers. Nos. 1 & 2 wheel race coverings were examined. No. 2 being found unsafe, the same was reported to you by letter, this covering should be removed as quickly as possible. The railing around the Tail Race immediately in front of the wheel house requires painting, also the railings in front of

the dwellings. The complete blocking of No. 3 Engine 30" stop valve pit drain, made necessary the cutting off of the old drain and the laying of a new one in a manner that will give uninterrupted drainage, the drain being laid from the aforesaid pit to No. 1 Engine 30" valve pit, which connects with the lowest point of discharge where there is, and will be pumps constantly at work to remove the drainage water.

I particularly desire to bring under your notice, the large accumulation of ashes and other residues peculiar to our works, which is deposited in the yard during the winter and which presents a very unsightly appearance in the spring, and early part of the summer, and has elicited unfavorable comments from Engineers and others visiting the works. This unsightly heap could be effectually overcome, by building an iron shed immediately in front of the boiler houses, of sufficient capacity wherein the residues could be deposited during the winter, and removed at pleasure. This would admit of the grounds in this part of the yard, being put and kept in keeping with the rest, having well defined roads and grass plots.

#### No. 1 TURBINE WHEEL.

This wheel has worked well during the year, the repairs being slight, consisting of the removing of one of the pump valves and seat, the adjusting of the connecting rod and guide brasses. The remaking of the pump valve chest joints, and other minor repairs. The east end journal of the large bevelled wheel counter shaft, has always given and still gives trouble, it being found difficult to keep it from heating, which can only be done at the expense of large quantities of oil, which in my opinion is in some measure due to the lurch that has existed in these shafts ever since the wheel started. Present indications are that this wheel is good for another year's work without costly repairs. It should be painted.

#### No. 2 WHEEL.

A crack made its appearance in the rim of this wheel, of such a nature as in my opinion warranted me in stopping it, and reporting to you that I thought it unsafe to run it any longer, in which opinion you concurred. The head race entrance is effectually trapped off from the settling basin, also the tail race from the wheel pit. When the work of erecting the proposed wheels is being proceeded with, it will be probably necessary to employ a steam pump, to keep the wheel pit dry, as water is making its way through many of the joints of the foundations in the wheel pit.

#### No 3 WHEEL.

The pump and other parts attached to this wheel, are as old as

the same worn out condition.  
repairs may be looked for at

### HEEL.

the year, requiring but slight  
sometime a perceptible leak by  
and recommend when condition  
on pumps be constructed with  
ar to the present gearing exactly  
umps. This would be an improve-

### ENGINE.

est of the refitting of one of the  
examing of all the other pistons.  
the remaking of several of the  
arried, 110 lbs. most of the joint  
Where such high steam is carried  
which would effectually remove  
ained off. The magnitude of the  
applications, makes sharp attention  
ge bolt was renewed, to get, at  
it being found necessary to make  
the outside of the valve chest  
with the new.

uplicate set of pistons and piston  
desirable to have them on hand.  
is in good order and working  
and portions of the lagging

### ENGINE.

re very slight consisting of the  
properly securing in position  
worked loosely. The over  
examining and setting out of the  
of the drain pipes and other  
aving of several broken studs  
valves readjusted and piston  
with a new stuffing

### WHEEL ROLLERS.

the year, no repairs being  
keeping a

working boilers, several of the steam pipe joints, had to be remade and a section of the feed pipe, in front of the boilers was renewed. You had the fronts and pipes painted, which they very much needed. They are at present in good order. The usual fire bricks and clay will be required, and probably a new set of grate bars.

### No. 2 BATTERY OF BOILERS.

One of the boilers of this battery is being, and will be required, to be used with No 3 battery, furnishing steam to No 3 engine, when running up to maximum speed. A new set of grate bars will be necessary and the usual fire bricks will be required.

### No. 3 BATTERY OF BOILERS.

These boilers are in good order, and present indications are that they may be reasonably looked upon, as being good for another year's service without costly repairs. They were furnished with a new set of grate bars. All the boilers were tested by the City Boiler Inspector, and pronounced all right.

### THE PORTABLE STEAM PUMP AND BOILER.

The boiler was thoroughly repaired by John McDougall after which it was tested by Mr E. O. Champagne, the City Boiler Inspector, who has not officially advised me of the limit of steam allowed by himself to be carried on the boilers, in fact, I have never been furnished with certificates of the tests made on the boilers under my charge. If they are not furnished to your office, they are not furnished at all. They should be.

I would especially wish to bring under your notice the very early period at which we are obliged to commence continuous day and night pumping by steam owing to the unprecedentedly low water in the Aqueduct, which will necessarily cause a larger consumption of coal than was anticipated to carry us through the winter, unless some favorable condition arise, which is not apparant at present.

The following are the dates at which we commenced continuous day and night pumping, for the last four years, and the date at which we commenced this year.

|                     |               |
|---------------------|---------------|
| 1889.....           | February 23rd |
| 1890.....           | March 22nd    |
| 1891.....           | February 7th  |
| 1892.....           | February 13th |
| and again 1892..... | December 21st |

Another consideration is that the engine having to perform such long and heavy duty, will, when the winter pumping is over,

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into, in order that the condi-  
be ascertained, and in engines of  
much work and considerable time,  
of the engines will be required  
hydraulic machinery in keeping up  
half will be required to be in atten-  
leaving the other half to do the  
will require some outside assistance.  
for use as soon as possible.  
my thanks for the able assa  
the discharge of my duty.

submitted

water to be,

Your obedient servant,

D. KEARNEY  
*Engineer*



## HIGH LEVEL PUMPING STATION, McTavish Street.

January 1893.

DAVIS, Esq.

*Superintendent, M. W. W.*

City Hall, Montreal.

g to submit my annual report for the year ending 31st Dec'r on the work done, conditions and requirements of McTavish High Level Reservoirs, and High Level Pumping Station.

## THE WORTHINGTON ENGINE.

in the same condition as last year and requires some light s. It worked but one day during the past year. The condition has increased so much that this engine cannot force water : than the level of Pine Avenue. The steam pipes of this : require covering ; sectional asbestos is preferable.

## THE GILBERT ENGINE.

s engine is working every day, has worked well throughout ear and gave no trouble other than the breaking of a stem- in the air pump bucket, and displacing of another in a hot the boiler plate frame that carries the friction pulleys for ns got worn out. All these reparations were made at the shop Low Level pumping works. I put in two valves in the air pump t which I had on hand. I renewed 17 rubber valves and 40 wire springs in pumps during the year, the joints on steam burnt out occasionally and had to be remade. A set of wooden s is required for fastening tubes in heater connected on the nser, the present bushing is giving out. I would recommend ckman's patent fan for furnace blast instead of the present t would relieve the engine considerably. The engine and s require to be painted, the steam pipes to be covered with s and painted, the wooden casing on cylinders to be sand- ed and varnished.

## THE BOILERS.

Gilbert boiler is in good working condition, it worked in with the White boiler during the year. The water heater

connected with this boiler is worn out for over a year, and is much against the working of the boiler, as the water feed enters at a very low temperature, it requires to be renewed as soon as possible. The boiler requires to be covered anew as the present covering is burnt and falling off. This boiler required no repairs for the past year other than the making of steam joints on the superheater. We had the bottom flue covered with cast iron plates, as the flags used heretofore cracked with the heat. It would be recommendable to have the smoke box enlarged and the sheet iron flue to be renewed, a straight one connecting with the chimney would be preferable. I would also recommend a blow off pipe from safety valve of the boiler, up through the roof of building.

### THE " WHITE'S " BOILER.

This boiler worked in turn with the Gilbert during the year and required no work done or repairs other than the remaking of joints on steam pipes and super heater. It would be recommendable to enlarge the smoke box or combustion chamber as the boiler seems choked in the draught, also to change the top sheet iron flue to a straight one and do away with the bends connecting with the chimney; a blow off pipe from safety valve of this boiler is also required.

### THE OLD ENGINE HOUSE.

Requires painting and oak graining, a new floor, as the present one is decayed and a new oil cloth for same. The water course around outside of this building is all broken by the frost and a new one is required. I would recommend wooden blocks.

### THE NEW ENGINE ROOM.

This room requires to be newly painted, walls, ceiling and floor. It requires six iron girders to lay across beams for lifting purposes, 18 feet long and strong enough to lift a ton weight in the centre; the place is much in need of a store room to keep supplies.

### THE BOILER HOUSE.

This building requires a new floor of flagging or rock cement. The back wall must be repaired right away as the snow, water and surface water is coming through thus injuring the wall and roof. One of the rafters is decaying from this water and must be supported by a new upright iron post.

The inside of this room requires whitewashing and a few other repairs

### THE CHIMNEY.

A conical shaped, sheet iron lining, is necessary for this chimney, from centre of the height to the top, as the present built is not

ioned with boilers and we are compelled to use a force  
 the time. There has been a new cast iron door put in base  
 money for cleaning accommodations.

### THE COAL SHED.

roof of this shed is leaking and requires to be caulked with  
 and pitched, tared and covered with 3 inch timber.  
 back wall to be repaired as the surface water is coming  
 h it.

### THE McTAVISH RESERVOIR.

supply from this reservoir was continually on the city  
 the past year. The whole portion of centre wall wants to  
 aired, it leaks so badly from side to side, that a reserve  
 be kept in either. The masonry in back wall requires grout-  
 pointing with cement, also to be puddled with clay back of  
 considerable surface water is getting into the reservoir.  
 are several of the coping stones of the old portion of the  
 air crumbling away and require to be replaced. The retain-  
 ills are all tight. The revetment requires a new covering of 1½  
 boards of which it will take about 400, and about 75 three inch  
 the same to be coated with tar. The wooden fencing around  
 air property requires straightening and painting. The banks  
 opes were kept in good order during the past summer, the  
 cleaned out and grass cut regularly. It would be an important  
 ument to make a macadamized road on reservoir bank from  
 ce on north side to coal shed, as the coal carts keep the bank  
 and hard to keep in order. The electric light on the bank is of  
 advantage, and if the light department would place one on  
 on road at north side of reservoir it would be a great benefit  
 as well as to the public as this corner is in total darkness.

### THE VALVE HOUSE.

walls require pointing on the outside; the roof, doors, win-  
 ceiling and cornices to be painted. The floodgates in overflow  
 e are decayed and wants renewing. A new water float and  
 are required, also some iron braces to stay valve rods in well;  
 re temporarily fixed with wooden ones.

### HIGH LEVEL RESERVOIR.

reservoir was kept continually full for the past year on its  
 1, except half a day (11th June) while renewing a service  
 o the Allan property during which time the old engine  
 d on the section. There is a slight leak showing from

the reservoir at foot of slope. The back and end walls require pointing as surface water is getting into reservoir. The valve house wants a new floor and frame, the present one is decayed. It would be recommendable to have a telephone placed here by which we would get water gauge, &c., thus saving a lot of time. A low water gauge placed here would be a benefit in case a main broke, the alarm would be sounded in Engine house or dwelling. A small boat is required for this reservoir.

### THE DWELLING.

The dwelling requires some sanitary improvements. The extension of the engine room water closet to the top of building and the water closet of dwelling placed therein, would allow the pipes to be removed from one of the principal rooms of the house which they at present pass through and causes a dangerous and disagreeable smell. There was \$150 appropriated for this last spring but nothing was done. The steam heating pipes are leaking and requires renewing. All the windows in and outside, and blinds require painting as they have not been done for years. Also the cornices and wood work to be painted.

### TELEPHONES.

The private telephone owing to the defect in instrument, or some other reason, has given very poor satisfaction during the year. The other instrument worked very well.

### THE SCALE.

The timbers of the scale are all decayed and broken. A new scale must be put in before we can weigh any more coal. Also a new scale house is required the present one is decayed and tumbling down. A new cover over scale will be required to be built.

It would be recommendable to concrete the bottoms of the reservoirs as they are at present very rough and expensive to clean and wash out. It would also save a lot of time, as at present it takes about a week to clean them which is a very long time to keep them empty.

The whole respectfully submitted,

I have the honour to be,

Sir,

Your obedient servant,

JAMES COLEMAN.

## WATER WORKS SHOP.

March, 1893.

A. DAVIS, Esq.

*Superintendent Water Works.*

DEAR SIR,

I respectfully submit the report of the work in detail done under my supervision during the year ending December 31st 1892.

## PIPE LAYING.

The new 30" pipe on Atwater Avenue was connected to the old 30" pipe at St. Antoine Street.

St. Sulpice Street pipe, 24", was extended to Commissioners, and through Commissioners Street to Berri and up Berri to St. Francis Street.

Part of the 24" pipe which had to be removed in Ontario Street Subway was relaid as far as the west side of the bridge, leaving a gap of about 300 feet to be laid this year.

A 20" pipe was laid from Sherbrooke Street 30", through Park Ave. to Pine Ave., and through Pine Av. to St. Denis St.

A 16" main was laid on Cadieux Street from Prince Arthur Street to Duluth Avenue, connecting with the 20" of Pine Avenue.

## 12" PIPES.

12" pipes were laid in the following streets :

Mount Royal Avenue, from Cadieux Street to Park Avenue.

University street, from Pine Avenue to Prince Arthur Street.

Prince Arthur Street, from University Street to Cadieux Street.

Cadieux Street, from Prince Arthur Street to Rachel Street.

Sherbrooke Street from McTavish Street to University Street.

All these 12" pipes are fed from the High Level Reservoirs.

A double line of 12" pipes was laid across the Lachine Canal, west of Black's Bridge, connecting Common Street 12" pipe, to McGill Street 10" main.

These last pipes and the following are fed from the Low Level :

Congregation Street, from Wellington to Leber Street.

Common Street, from near McGill to Dalhousie Street.

St. Catherine Street, from Harbour Street to East Limit.

Ontario Street, from Cuvilier Street to East Limit.

Dalhousie Street, from William Street to Common Street.

Shearer Street, from St. Patrick Street to Grand Trunk Street.

Mignonne Street, from half way East of Iberville Street, to west side Iberville Street.

Beaudry Street, from Craig Street to Notre Dame Street.  
Inspector Street, from 150 feet south of St James to Lagauchetière Street.

Milton Street, from St. Lawrence Street to St. Urbain Street.  
Pine Avenue, from East of Park Avenue to Durocher Street.  
Lagauchetière Street, across St. Hubert.  
Lagauchetière Street, across Jacques-Cartier Street.

### 10" MAINS.

10" Mains were laid in the following Streets :

Papineau Avenue, from St. Catherine 12" to Sherbrooke 30"  
Montcalm Street, from Ontario Street to Sherbrooke Street.  
Atwater Avenue, from South of Dorchester St. to St. Catherine Street.  
College Street, connecting to McGill 12" main.  
St. Maurice Street, from McGill Street to Dupré Lane.  
Grey Nun Street, from William to Common Street.  
Durocher Street, from Sherbrooke Street to Pine Avenue.  
Aqueduct Street, from St. Antoine to North of Overdale Avenue.  
Argyle Avenue, from Aqueduct Street to 200 feet west of Mount St. Mary Avenue.  
Riverside Street, from Mill Street to Conway Street.  
Richmond Street, from south of St. James Street to south of Richmond Square.  
Prefontaine Street, from St. Catherine to Ontario Street, 24" main.  
Prefontaine Street, from Notre Dame Street 10" main to 15 feet north of Notre-Dame Street.  
Prince Street, from Common to north of Brennan Street.  
Pipes of smaller dimensions were laid in many streets.  
Schedule No. 12 shows all the details in pipelaying.  
A 30" valve should be put on the 30" main pipe, half way between Papineau Avenue and St. Denis Street, also on the same pipe, half way between McGill College Avenue and Moffats Hill, or Atwater Avenue south of Dorchester Street.  
Two of the 24" valves at either side of the Lachine Canal should be altered so that they could be shut from the surface, or the chambers drained to William Street sewer.  
Both the 24" and 20" valves at Guy and St. James Street, should be altered as the wells stand full of water and cannot be drained.  
A 24" pipe should be laid on St. Denis Street, before the permanent paving is laid, from Sherbrooke Street to Pine Avenue 20" main. This may have some day to be extended to the North river. The experience at large fires shows the necessity of large mains to maintain the pressure.

## MAIN REPAIRS, Etc.

The 30" valve cor. Sherbrooke and St. Famille Sts. was altered and can now be worked from the street surface.

One 30" breeches pipe broke near St. Peter River on Atwater Avenue by concussion whilst the 30" pipes were shut to make new connection on St. Antoine Street.

The old broken 30" valve cor. Sherbrooke St. and McGill College Avenue was taken out and replaced by a new one.

A 30" valve spindle was broken near the wheel house and was replaced by a new one.

The Bleury Street 24" main broke by the settling of the excavation and the cause was poor metal, there was no damage done by this break. The 20" main broke on Park Avenue by the same cause; and the 16" main on Cadieux Street also broke from bad metal.

The breaks on main pipes were as follows :

|    |     |                            |   |   |   |   |
|----|-----|----------------------------|---|---|---|---|
| 1  | 30" | Breeches pipe.             |   |   |   |   |
| 1  | 24" | Pipe.                      |   |   |   |   |
| 2  | 12" | "                          |   |   |   |   |
| 3  | 10" | "                          |   |   |   |   |
| 8  | 8"  | "                          |   |   |   |   |
| 7  | 6"  | "                          |   |   |   |   |
| 21 | 4"  | "                          |   |   |   |   |
| 3  | 24" | Joints were blown out.     |   |   |   |   |
| 1  | 20" | "                          | " | " | " | " |
| 12 | 12" | "                          | " | " | " | " |
| 19 | 10" | "                          | " | " | " | " |
| 8  | 8"  | "                          | " | " | " | " |
| 14 | 6"  | "                          | " | " | " | " |
| 29 | 4"  | "                          | " | " | " | " |
| 1  | 3"  | "                          | " | " | " | " |
| 1  | 30" | Valve was renewed.         |   |   |   |   |
| 3  | 8"  | "                          | " | " |   |   |
| 4  | 6"  | "                          | " | " |   |   |
| 14 | 4"  | "                          | " | " |   |   |
| 1  | 30" | Valve spindle was renewed. |   |   |   |   |
| 1  | 12" | "                          | " | " | " | " |
| 3  | 10" | "                          | " | " | " | " |
| 1  | 8"  | "                          | " | " | " | " |
| 10 | 6"  | "                          | " | " | " | " |
| 11 | 4"  | "                          | " | " | " | " |

A new 12" drain had to be laid from one of the 30" valve chambers at the Wheel House. Some new extensions had to be made on the exhibition grounds and two men were in attendance during the exhibition time last fall. The 4" pipe on St. Urbain

Beaudry Street, from Craig Street to Inspector Street, from 150 feet south of tière Street.

Milton Street, from St. Lawrence Str.

Pine Avenue, from East of Park Avenue Etc.

Lagauchetière Street, across St. Hubert

Lagauchetière Street, across Jacques

### 10" MAINS

10" Mains were laid in the following

Papineau Avenue, from St.

Montcalm Street, from On

Atwater Avenue, from St. Street.

College Street, connecting

St. Maurice Street, from B

Grey Nun Street, from W

Durocher Street, from She

Aqueduct Street, from St

Argyle Avenue, from Aq

St. Mary Avenue.

Riverside Street, from J

Richmond Street, from

Richmond Square

Prefontaine Street, from

main.

Prefontaine Street, from Not north of Notre-Dame Street

Prince Street, from Cornme

Pipes of smaller dimension

Schedule No 12 shows all

A 30" valve should be p between Papineau Avenue a pipe, half way between Met or Atwater Avenue south

Two of the 24" valves at be altered so that they chambers drained to Will

Both the 24" and 20" v be altered as the wells st

A 24" pipe should be nent paving is laid, from main. This may have s The experience at large maintain the pressure

and connected to taken up from

the main pipes laid

in old mains.

aves were renewed, In former reports I

were employed until

was two thousand

Etc.

over drains, one hundred pipes were broken in cocks were renewed, replaced by iron ones, were renewed where

replaced by pneumatic stop tubes were changed

private property and

were investigated. Five and the cause could not

was four thousand and tubes, settling of pavement, also the settling repairs.

should be lowered below

to Beaudry St.

St.

St.

St.

St.



in the name of all the employees  
 for my supervision for the valuable  
 for you treated us all.

attested,

obedient servant,

CHAS. LAGACÉ,

*Foreman.*

No 1.—SCHEDULE SHOWING THE WORK OF TURBINE No. 1.

| MONTHS    |       | Time of<br>pumping | Revolutions | Gallons<br>pumped. | Average pressure<br>in air vessel. | Castor<br>oil. | Tallow. | Coal<br>oil. | Cotton<br>waste. | Coal for<br>beating. |
|-----------|-------|--------------------|-------------|--------------------|------------------------------------|----------------|---------|--------------|------------------|----------------------|
| 1892      |       | Hrs                | M           |                    |                                    |                |         |              |                  |                      |
| January   |       | 71                 | 00          | 149,099,369        | 77                                 | 189.50         | .....   | 155.00       | 27.75            | 74,970               |
| February  |       | 61                 | 00          | 58,138,393         | 76                                 | 63.00          | .....   | 102.00       | 12.00            | 71,960               |
| March     |       | .....              | .....       | .....              | .....                              | .....          | .....   | 62.00        | .....            | 76,520               |
| April     |       | 61                 | 00          | 128,600,389        | 77                                 | 191.25         | .....   | 116.00       | 24.68            | 60,270               |
| May       |       | 74                 | 00          | 149,730,926        | 77                                 | 279.00         | .....   | 124.00       | 27.43            | 19,540               |
| June      |       | 71                 | 00          | 149,296,614        | 76                                 | 270.00         | .....   | 120.00       | 27.63            | .....                |
| July      |       | 74                 | 00          | 156,533,594        | 75                                 | 279.00         | 45.00   | 124.00       | 25.34            | .....                |
| August    |       | 74                 | 00          | 150,294,320        | 75                                 | 238.50         | 40.00   | 133.00       | 23.87            | .....                |
| September |       | 70                 | 20          | 143,670,596        | 77                                 | 182.25         | 35.00   | 145.00       | 24.00            | .....                |
| October   |       | 72                 | 00          | 139,955,411        | 76                                 | 203.50         | .....   | 155.00       | 22.00            | 22,230               |
| November  |       | 61                 | 20          | 132,429,384        | 77                                 | 180.00         | .....   | 150.00       | 22.62            | 76,210               |
| December  |       | 70                 | 55          | 131,915,979        | 78                                 | 200.25         | .....   | 155.00       | 22.56            | 93,340               |
| Total     | ..... | 744                | 05          | 1,469,064,975      | 76                                 | 2,225.25       | 120.00  | 1,541.00     | 259.85           | 494,940              |
| Last year | ..... | 794                | 15          | 1,604,035,388      | 76                                 | 1,512.00       | 161.00  | 1,613.00     | 311.63           | 454,850              |

No. 2.—SCHEDULE SHOWING THE WORK OF THE BREAST WHEEL No. 2 AND TURBINES Nos. 3 AND 4.

| MONTHS         | TIME OF PUMPING. |         |         |           | REVOLUTIONS.  |            |               | Gallons pumped. | AV. pressure in air vessel. | In Pounds. |        |  |
|----------------|------------------|---------|---------|-----------|---------------|------------|---------------|-----------------|-----------------------------|------------|--------|--|
|                | Breast wheel.    |         | Turbine |           | Breast wheel. | Turbine    | Turbine       |                 |                             |            |        |  |
|                | No. 2.           | No. 3.  | No. 4.  | No. 2.    |               |            |               |                 |                             | No. 3.     | No. 4. |  |
|                | Hrs. M.          | Hrs. M. | Hrs. M. | Hrs. M.   |               |            |               |                 |                             |            |        |  |
| 1892.          |                  |         |         |           |               |            |               |                 |                             |            |        |  |
| January.....   | 48.00            | 337.05  | 635.50  | 24,105    | 249,488       | 803,126    | 111,010,600   | 75              | 119.25                      | 111        | 28.00  |  |
| February.....  | .....            | 13.20   | 172.30  | .....     | 9,366         | 170,971    | 16,089,674    | 72              | 27.00                       | 74         | 13.37  |  |
| March.....     | .....            | .....   | 724.55  | .....     | .....         | 888,836    | 76,439,896    | 74              | 94.50                       | 96         | .....  |  |
| April.....     | 621.45           | 640.30  | 695.45  | 491,995   | 506,025       | 965,159    | 230,796,634   | 75              | 245.25                      | 118        | 23.37  |  |
| May.....       | 739.25           | 744.00  | 741.00  | 603,041   | 602,798       | 1,005,077  | 264,900,794   | 76              | 279.00                      | 114        | 29.50  |  |
| June.....      | 712.45           | 710.00  | 720.00  | 556,600   | 595,866       | 1,004,766  | 261,414,841   | 75              | 270.00                      | 120        | 27.25  |  |
| July.....      | 690.00           | 741.00  | 741.00  | 561,321   | 613,525       | 1,026,491  | 262,147,691   | 76              | 275.50                      | 124        | 27.63  |  |
| August.....    | 408.00           | 725.20  | 744.00  | 322,453   | 625,331       | 1,081,287  | 233,262,714   | 76              | 254.25                      | 132        | 22.21  |  |
| September..... | .....            | 710.00  | 706.50  | .....     | 583,342       | 980,193    | 170,631,214   | 76              | 200.25                      | 145        | 22.00  |  |
| October.....   | .....            | 717.55  | 719.40  | .....     | 528,972       | 875,046    | 153,546,112   | 76              | 202.50                      | 155        | 25.00  |  |
| November.....  | .....            | 702.55  | 708.40  | .....     | 539,322       | 891,785    | 156,513,166   | 76              | 200.25                      | 150        | 24.25  |  |
| December.....  | .....            | 525.30  | 643.30  | .....     | 389,099       | 774,786    | 124,218,241   | 76              | 168.50                      | 140        | 20.00  |  |
| Total.....     | 3219.55          | 6557.35 | 7956.40 | 2,599,515 | 5,243,131     | 10,458,413 | 2,063,843,200 | 76              | 2,336.25                    | 1519       | 262.62 |  |
| Last year....  | 5246.55          | 6638.50 | 249.05  | 4,113,418 | 5,005,694     | 9,515,501  | 2,177,793,662 | 76              | 2,366.25                    | 1625       | 318.23 |  |

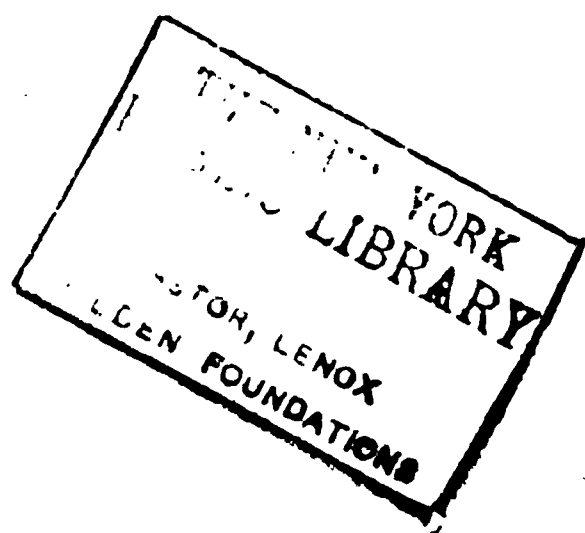
No. 3.—SCHEDULE SHOWING THE WORK OF STEAM ENGINE No. 1.

| MONTHS.      | Pumping time. | Hrs. M. | Revolutions. | Gallons pumped. | COAL USED IN POUNDS. |              |                                | Av. pressure in air vessel. | IN POUNDS.       |            |           |             |               |           |               |
|--------------|---------------|---------|--------------|-----------------|----------------------|--------------|--------------------------------|-----------------------------|------------------|------------|-----------|-------------|---------------|-----------|---------------|
|              |               |         |              |                 | For pumping.         | For banking. | To raise<br>1,000,000 gallons. |                             | Cylinder grease. | Valvoline. | Seal oil. | Castor oil. | Cylinder oil. | Coal oil. | Cotton waste. |
|              |               |         |              |                 |                      |              |                                |                             |                  |            |           |             |               |           |               |
| January....  | 276.30        |         | 235,052      | 129,278,600     | 425,350              | 52,820       | 3,698                          | 75                          | .....            | .....      | 79.87     | 56.25       | 192           | 11:       | 22.18         |
| February...  | 553.05        |         | 487,587      | 268,172,850     | 848,070              | 21,580       | 3,242                          | 73                          | .....            | .....      | 79.87     | 63.00       | 192           | 192       | 31.00         |
| March.....   | 740.00        |         | 594,094      | 326,751,700     | 1,068,590            | .....        | 3,270                          | 72                          | .....            | .....      | 79.87     | 67.50       | 224           | 242       | 26.00         |
| April. ....  | 86.00         |         | 58,927       | 32,409,850      | 105,770              | 1,760        | 3,317                          | 71                          | .....            | .....      | 8.14      | 6.12        | 24            | 24        | 11.00         |
| May .....    | .....         |         | .....        | .....           | .....                | .....        | .....                          | .....                       | .....            | .....      | .....     | .....       | .....         | .....     | .....         |
| June .....   | 87.05         |         | 68,786       | 37,832,300      | 134,750              | 19,250       | 4,070                          | 75                          | 14               | .....      | .....     | 24.75       | 32            | 24        | 12.43         |
| July.....    | 208.05        |         | 151,211      | 83,166,050      | 280,740              | 33,870       | 3,783                          | 77                          | 28               | .....      | 17.75     | 42.75       | .....         | 40        | 10.00         |
| August.....  | 320.40        |         | 266,246      | 124,435,300     | 414,200              | 38,240       | 3,635                          | 75                          | 42               | .....      | 17.75     | 63.00       | 24            | 42        | 15.00         |
| September    | 265.30        |         | 216,584      | 119,121,200     | 335,590              | 35,320       | 3,533                          | 75                          | 21               | .....      | 26.62     | 56.25       | 64            | 48        | 19.00         |
| October..... | 36.25         |         | 27,998       | 15,398,900      | 52,510               | 10,670       | 4,102                          | 75                          | .....            | 15.25      | 8.87      | 11.25       | .....         | 24        | 19.50         |
| November..   | 144.10        |         | 116,745      | 64,209,750      | 203,480              | 20,850       | 3,524                          | 75                          | .....            | 52.50      | 17.75     | 27.00       | .....         | 32        | 15.31         |
| December..   | 8.00          |         | 6,309        | 3,469,950       | 11,110               | 20,150       | 9,008                          | .....                       | .....            | .....      | .....     | 2.25        | .....         | .....     | .....         |
| Total....    | 2,725.30      |         | 2,229,539    | 1,201,246,450   | 3,932,160            | 254,510      | 3,476                          | 75                          | 105              | 67.75      | 336.49    | 420.12      | 762           | 792       | 181.42        |
| Average ...  | 2,954.25      |         | 2,469,831    | 1,358,407,050   | 4,500,620            | 391,160      | 3,602                          | 75                          | ....             | .....      | 404.49    | 570.00      | 1,880         | 768       | 176.07        |

| MONTHS.        | Pumping | Hrs. M    | Revolutions. | Gallons pumped | For pumping. | For banking fires. | To raise<br>1,000,000 gallons. | Av. press. on pump-1 | IN POUNDS.  |               |           |           |               |              |            |       |
|----------------|---------|-----------|--------------|----------------|--------------|--------------------|--------------------------------|----------------------|-------------|---------------|-----------|-----------|---------------|--------------|------------|-------|
|                |         |           |              |                |              |                    |                                |                      | Castor oil. | Cylinder oil. | Seal oil. | Coal oil. | Cotton waste. | Cylinder Gre | Valvoline. |       |
| 1892.          |         |           |              |                |              |                    |                                |                      |             |               |           |           |               |              |            |       |
| January.....   | 82.15   | 58,539    | 25,523,004   | 126,610        | 19,590       | 5,806              | 75                             | 18.00                | 56          | 8.87          | 24        | 8.00      | .....         | .....        | .....      | ..... |
| February.....  | 60.00   | 41,062    | 17,903,032   | 99,700         | 9,960        | 6,125              | 75                             | 11.25                | 32          | .....         | .....     | 15.00     | .....         | .....        | .....      | ..... |
| March .....    | 78.45   | 54,370    | 23,705,320   | 115,880        | 15,420       | 5,538              | 75                             | 11.24                | 48          | 17.75         | 24        | 8.00      | .....         | .....        | .....      | ..... |
| April .....    | 98.30   | 66,041    | 28,793,876   | 145,800        | 17,410       | 5,668              | 75                             | 9.00                 | 63          | 8.87          | 16        | 8.00      | .....         | .....        | .....      | ..... |
| May .....      | 54.30   | 35,909    | 15,656,324   | 94,860         | 10,650       | 6,739              | 75                             | 6.75                 | 16          | .....         | 16        | 8.00      | 7             | .....        | .....      | ..... |
| June .....     | .....   | .....     | .....        | .....          | .....        | .....              | .....                          | .....                | .....       | .....         | .....     | .....     | .....         | .....        | .....      | ..... |
| July .....     | .....   | .....     | .....        | .....          | .....        | .....              | .....                          | .....                | .....       | .....         | .....     | .....     | .....         | .....        | .....      | ..... |
| August .....   | 76.10   | 52,661    | 22,960,196   | 118,710        | 15,592       | 5,549              | 75                             | 6.75                 | 24          | 8.87          | 16        | 10.00     | 14            | .....        | .....      | ..... |
| September ...  | 402.00  | 315,326   | 137,482,136  | 653,690        | 52,650       | 5,137              | 75                             | 36.00                | 64          | 53.25         | 120       | 23.00     | .....         | 105.00       | .....      | ..... |
| October .....  | 262.00  | 208,697   | 90,991,892   | 464,210        | 32,770       | 5,461              | 75                             | 20.40                | .....       | 35.80         | 86        | 35.40     | .....         | 105.00       | .....      | ..... |
| November. ...  | 519.30  | 422,740   | 184,314,610  | 1,026,150      | 37,160       | 5,736              | 75                             | 45.00                | .....       | 71.00         | 176       | 25.50     | .....         | 172.50       | .....      | ..... |
| December ..... | .....   | .....     | .....        | .....          | .....        | .....              | .....                          | .....                | .....       | .....         | .....     | .....     | .....         | .....        | .....      | ..... |
| Total .....    | 1633.40 | 1,255,345 | 547,330,420  | 2,841,610      | 211,192      | 5,690              | 75                             | 164.40               | 303         | 204.41        | 480       | 140.90    | 21            | 382.50       | .....      | ..... |
| Last year..    | 660.30  | 486,737   | 212,218,640  | 1,081,860      | 102,490      | 5,579              | 75                             | 110.25               | 512         | 61.11         | 192       | 60.75     | .....         | .....        | .....      | ..... |

No 5.—SCHEDULE SHOWING TOTAL PUMPING AT LOW LEVEL STATION.

| MONTHS    | CY WATTLER POWER |               |               |               | BY STEAM POWER. TOTAL FOR EACH MONTH. |                  |           |           | Percent-<br>age.      |          | Av. level<br>of water. |                        |
|-----------|------------------|---------------|---------------|---------------|---------------------------------------|------------------|-----------|-----------|-----------------------|----------|------------------------|------------------------|
|           | Wheel<br>No 1    | Wheel<br>No 2 | Wheel<br>No 3 | Wheel<br>No 4 | Engine<br>No. 1                       | Engine<br>No. 2. | By water. | By steam. | By water<br>By steam. | By water | Head of<br>Aqueduct    | In front<br>of wheels. |
| January   | 136004360        | 5447640       | 30024224      | 60000000      | 120270000                             | .....            | 250130000 | 120270000 | 37941850005           | 92 34    | 60.37                  | 95.98 00               |
| February  | 58108393         | ...           | 1366178       | 14703508      | 306773850                             | 25503004         | 74328007  | 293803854 | 307923921             | 20 2079  | 60.56                  | 73.86 07               |
| March     | ...              | ...           | ...           | 7643 206      | 320751700                             | 17903082         | 76430000  | 244664732 | 421004626             | 16 1601  | 60.36                  | 60.95 00               |
| April     | 128600 800       | 72815280      | 748017 00     | 80000000      | 334000000                             | 20706330         | 301397021 | 66116170  | 417012181             | 90 66 12 | 60.38                  | 75.96 20               |
| May       | 140730020        | 80260000      | 80214104      | 80430622      | ...                                   | 28720076         | 414631720 | 25703876  | 443426000             | 98 50 6  | 60.38                  | 49 36 31               |
| June      | 149296014        | 86816500      | 88186188      | 86400078      | 37832300                              | 15006324         | 410711458 | 63480004  | 464900000             | 69 47 11 | 60.39                  | 05 99 94               |
| July      | 156335594        | 83075508      | 90801700      | 80270486      | 83100050                              | ...              | 418001900 | 38168000  | 501549000             | 83 41 16 | 60.39                  | 31 20 00               |
| August    | 150204320        | 47723044      | 92540009      | 92990082      | 124430000                             | ...              | 383567034 | 124430000 | 607000000             | 75 60 24 | 60.38                  | 49 36 56               |
| September | 143670506        | ...           | 86334616      | 84206308      | 119151200                             | 23060196         | 814201010 | 142061206 | 424363200             | 68 87 81 | 18.37                  | 00 30 30               |
| October   | 139866411        | ...           | 73287856      | 75268206      | 153980000                             | 137480136        | 908501693 | 168601000 | 446390567             | 65 75 34 | 56.37                  | 65 36 06               |
| November  | 122420384        | ...           | 79619656      | 76693610      | 64507500                              | 90091592         | 276042050 | 165301842 | 434144192             | 81 20 16 | 71.87                  | 90 34 54               |
| December  | 131916070        | ...           | 57566652      | 60691608      | 34000500                              | 18431040         | 250134222 | 187784521 | 443918017             | 57 70 43 | 60.37                  | 04 36 20               |







No. 6.—SCHEDULE SHOWING THE WORK OF ENGINE No. 2. (THE GILBERT) AT HIGH LEVEL PUMPING STATION.)

| MONTHS.<br><br>1892. | Pumping<br>time. | Revolu-<br>tions. | Gallons<br>pumped. | Av. pressure in air vessel | COAL USED IN POUNDS. |                          |                                   |                 | Cylinder<br>oil. | Cotton<br>waste. |
|----------------------|------------------|-------------------|--------------------|----------------------------|----------------------|--------------------------|-----------------------------------|-----------------|------------------|------------------|
|                      | Hrs. M.          |                   |                    |                            | For<br>pumping.      | For<br>banking<br>fires. | To raise<br>1,000,000<br>gallons. | For<br>heating. |                  |                  |
| January .....        | 160.30           | 342701            | 16503397           | 108                        | 64597                | 12400                    | 4665                              | 3175            | 122.50           | 20               |
| February .....       | 153.00           | 338012            | 16275614           | 108                        | 62055                | 11600                    | 4525                              | 2683            | 92.00            | 25               |
| March .....          | 163.00           | 356249            | 17153744           | 104                        | 72900                | 12600                    | 4984                              | 3823            | 89.00            | 20               |
| April .....          | 159.00           | 356847            | 17186536           | 108                        | 69988                | 12400                    | 4793                              | .....           | 91.00            | 25               |
| May .....            | 213.00           | 501986            | 24171126           | 109                        | 104060               | 18200                    | 5058                              | .....           | 128.00           | 25               |
| June .....           | 179.15           | 433487            | 20872876           | 110                        | 73642                | 12400                    | 4122                              | .....           | 105.00           | 20               |
| July .....           | 208.30           | 501990            | 24171320           | 110                        | 91866                | 14000                    | 4388                              | .....           | 106.00           | 20               |
| August .....         | 201.00           | 489817            | 23585180           | 110                        | 90147                | 13000                    | 4373                              | .....           | 104.00           | 20               |
| September .....      | 189.30           | 438956            | 21136171           | 110                        | 81910                | 15000                    | 4595                              | .....           | 105.00           | 20               |
| October .....        | 205.00           | 466612            | 22467835           | 110                        | 91670                | 12400                    | 4631                              | .....           | 102.00           | 20               |
| November .....       | 188.30           | 426247            | 20524221           | 110                        | 84718                | 12200                    | 4916                              | .....           | 92.50            | 22               |
| December .....       | 119.30           | 459853            | 22142379           | 110                        | 87924                | 12600                    | 4539                              | .....           | 96.25            | 20               |
| Total .....          | 2139.45          | 5,112,757         | 246,190,399        | 109                        | 879,477              | 158,800                  | 4,217                             | 9,681           | 1234.25          | 257              |
| Last year .....      | 1842.35          | 4,238,089         | 203,958,225        | 103                        | 684,707              | 153,800                  | 4,110                             | 4,597           | 1499.00          | 325              |

**No. 7—SCHEDULE SHOWING THE AVERAGE DEPTH OF WATER,  
THE RAIN FALL AND TEMPERATURE AT 9. A. M. AT  
McTAVISH STREET RESERVOIR.**

| MONTHS.<br><br>1892. | Average monthly<br>depth of water in<br>reservoir.<br><br>Feet. | RAIN GAUGES, IN INCHES. |        |                          |             | Average temperature<br>at 9 A. M. |
|----------------------|---|-------------------------|--------|--------------------------|-------------|-----------------------------------|
|                      |   | Rain.                   | Snow.  | Snow reduced to<br>rain. | Total rain. |                                   |
| January .....        | 22.67   | 0.74                    | 32.00  | 2.96                     | 3.70        | 17                                |
| February .....       | 22.17   | .....                   | 33.00  | 3.49                     | 3.49        | 19                                |
| March .....          | 22.21   | .....                   | 19.75  | 2.08                     | 2.08        | 19                                |
| April .....          | 21.58   | 1.02                    | 2.25   | 0.23                     | 1.25        | 38                                |
| May .....            | 21.83   | 1.61                    | .....  | .....                    | 1.64        | 49                                |
| June.....            | 21.56   | 5.44                    | .....  | .....                    | 5.44        | 66                                |
| July .....           | 20.94   | 2.20                    | .....  | .....                    | 2.20        | 67                                |
| August .....         | 22.12   | 4.61                    | .....  | .....                    | 4.61        | 66                                |
| September.....       | 22.27   | 2.91                    | .....  | .....                    | 2.91        | 59                                |
| October .....        | 22.28   | 1.53                    | .....  | .....                    | 1.53        | 31                                |
| November ..          | 22.18   | 0.88                    | 17.75  | 1.63                     | 2.51        | 31                                |
| December .....       | .....   | 0.27                    | 8.75   | 1.02                     | 1.29        | 18                                |
| Total.....           | 21.98   | 21.24                   | 113.50 | 11.41                    | 32.65       | 40                                |
| Last year.....       | 21.94   | 26.70                   | 61.25  | 5.85                     | 32.55       | 41                                |

**SCHEDULE No. 8.—REPAIRS TO MAINS, HYDRANTS AND VALVES  
DURING THE YEAR 1892.**

| DESCRIPTION.               | 30" | 24" | 20" | 16" | 12" | 10" | 8" | 6" | 4" | 3" | Hydrant<br>valves<br>renewed. | Hydrant<br>rods<br>broken. |
|----------------------------|-----|-----|-----|-----|-----|-----|----|----|----|----|-------------------------------|----------------------------|
| Main pipes broken .....    | 1   |     | 1   | 2   | 2   | 3   | 8  | 7  | 21 |    |                               |                            |
| Joints blown out .....     |     | 3   | 1   |     | 12  | 19  | 8  | 14 | 29 | 1  |                               |                            |
| Stop-valves renewed.....   |     |     |     |     |     |     | 3  | 4  | 14 |    |                               |                            |
| Valves spindles renewed... | 1   |     |     |     | 1   | 3   | 1  | 10 | 11 |    | 247                           | 27                         |

**REPAIRS &c., TO SERVICES.**

| Leaking<br>over<br>drains. | Couplings<br>leaking. | Burst<br>in wall. | Ground<br>cocks<br>renewed. | Wooden<br>boxes re-<br>placed by<br>iron ones. | Wooden<br>boxes renew-<br>ed where<br>new foot-<br>paths laid. | Old kind<br>cocks re-<br>placed by<br>pneumatic<br>valve. |
|----------------------------|-----------------------|-------------------|-----------------------------|--|--|---|
| 69                         | 110                   | 76                | 299                         | 550  | 1370   | 99  |

| Tubes changed<br>from inside<br>houses to out-<br>side in street. | Services<br>choked. | Frozen<br>outside. | Frozen<br>inside. | Frozen<br>in wall. | False<br>reports. | Leaks on<br>services<br>from va-<br>rious cau-<br>ses unde-<br>fined. |
|---|---------------------|--------------------|-------------------|--------------------|-------------------|---|
| 1447  | 99                  | 9                  | 100               | 38                 | 114               | 530   |

|   |      |
|---|------|
| New 6 noz. patent hydrants put in during year 1892..... | 143  |
| do do in position up to January 1893.....               | 584  |
| do 3 do do do .....                                     | 70   |
| do 2 do put in during 1892.....                         | 7    |
| do do in position up to January 1893.....               | 537  |
| Total.....  | 1191 |

|   |        |
|---|--------|
| Pneumatic stop cocks put in during 1892 (new work).....                 | 1890   |
| Pneumatic stop cocks, put in up to January 1893 (new work and repairs). | 17,525 |

**HYDRANTS FROZEN DURING YEAR COMMENCING JANUARY 1892,  
ENDING DECEMBER 1892.**

| January. | February. | March. | December. | Total hydrants frozen. |
|----------|-----------|--------|-----------|------------------------|
| 666      | 731       | 536    | 393       | 2,326                  |

Branch shops included in this report.

**JOHN FALLEN,**  
*Foreman at Shop.*

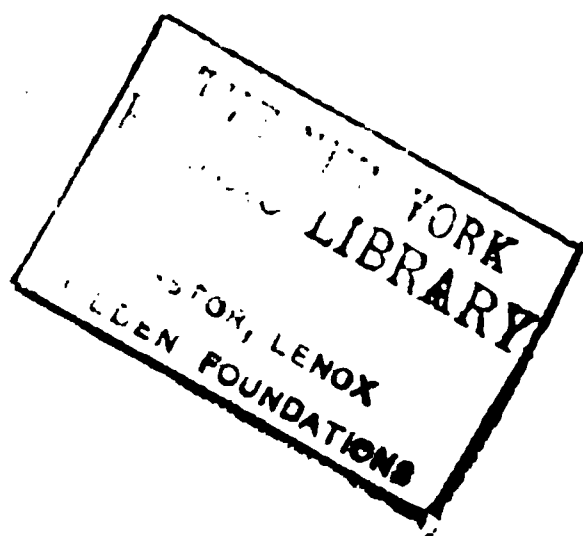
No. 3.—SCHEDULE SHOWING THE WORK OF STEAM ENGINE No. 1.

| MONTHS.      | Pumping time. | Hrs. M. | Revolutions. | Gallons pumped. | Coal used in pounds. |              |                             | Av. pressure in air vessel. | In Pounds.       |            |           |             |               |           |               |
|--------------|---------------|---------|--------------|-----------------|----------------------|--------------|-----------------------------|-----------------------------|------------------|------------|-----------|-------------|---------------|-----------|---------------|
|              |               |         |              |                 | For pumping.         | For banking. | To raise 1,000,000 gallons. |                             | Cylinder grease. | Valvoline. | Seal oil. | Castor oil. | Cylinder oil. | Coal oil. | Cotton waste. |
|              |               |         |              |                 |                      |              |                             |                             |                  |            |           |             |               |           |               |
| January...   | 276 30        |         | 235,052      | 129,278,600     | 425,350              | 52,820       | 3,698                       | 75                          | .....            | .....      | 79.87     | 56.25       | 192           | 11:       | 22.18         |
| February...  | 553.05        |         | 487,587      | 268,172,850     | 848,070              | 21,580       | 3,242                       | 73                          | .....            | .....      | 79.87     | 63.00       | 192           | 192       | 31.00         |
| March.....   | 740.00        |         | 594,094      | 326,751,700     | 1,068,590            | .....        | 3,270                       | 72                          | .....            | .....      | 79.87     | 67.50       | 224           | 24:       | 26.00         |
| April.. ...  | 86.00         |         | 58,927       | 32,409,850      | 105,770              | 1,760        | 3,317                       | 71                          | .....            | .....      | 8.14      | 6.12        | 24            | 24        | 11.00         |
| May .....    | .....         |         | .....        | .....           | .....                | .....        | .....                       | .....                       | .....            | .....      | .....     | .....       | .....         | .....     | .....         |
| June .....   | 87.05         |         | 68,786       | 37,832,300      | 134,750              | 19,250       | 4,070                       | 75                          | 14               | .....      | .....     | 24.75       | 32            | 24        | 12.43         |
| July... ..   | 208 05        |         | 151,211      | 83,166,050      | 280,740              | 33,870       | 3,783                       | 77                          | 28               | .....      | 17.75     | 42.75       | .....         | 40        | 10.00         |
| August.....  | 320.40        |         | 266,246      | 124,435,300     | 414,240              | 38,240       | 3,635                       | 75                          | 42               | .....      | 17.75     | 63.00       | 24            | 4:        | 15.00         |
| September    | 265.30        |         | 216,584      | 119,121,200     | 335,590              | 35,320       | 3,533                       | 75                          | 21               | .....      | 26.62     | 56.26       | 64            | 46        | 19.00         |
| October..... | 36.25         |         | 27,998       | 15,398,900      | 52,510               | 10,670       | 4,102                       | 75                          | ...              | 15.25      | 8.87      | 11.25       | .....         | 24        | 18.50         |
| November..   | 144.10        |         | 116,745      | 64,209,750      | 205,480              | 20,850       | 3,524                       | 75                          | .....            | 52.50      | 17.75     | 27.00       | .....         | 32        | 15.34         |
| December.    | 8.00          |         | 6,309        | 3,469,950       | 11,110               | 20,150       | 9,008                       | .....                       | .....            | .....      | .....     | 2.25        | .....         | .....     | .....         |
| Total.....   | 1,725 30      |         | 2,229,539    | 1,204,246,450   | 3,932,160            | 254,510      | .....                       | 75                          | 105              | 67.75      | 336.49    | 420.12      | 762           | 792       | 181.42        |
| Average ..   | 2,954 25      |         | 2,469,831    | 1,358,407,050   | 4,500,620            | 391,160      | 3,476                       | 75                          | ...              | .....      | 404.49    | 570.00      | 1,880         | 764       | 176.07        |
| Last year... |               |         |              |                 |                      |              | 7,602                       |                             |                  |            |           |             |               |           |               |
| Average .    |               |         |              |                 |                      |              |                             |                             |                  |            |           |             |               |           |               |

[illegible]

No. 8 *Cont'd*—Schedule showing the Repairs done to Main Pipes, Hydrants and Valves during year 1892.

| POSITION.                          | DATE.   | Diameter. | Valves. | Hydrants. | HOW REPAIRED.                       | Probable cause of injury.   |
|------------------------------------|---------|-----------|---------|-----------|-------------------------------------|-----------------------------|
| Perthuis corner Campeau.....       | March 4 | .....     | 1       | 1         | Put in new valve .....              | Hyd. valve leaking worn out |
| Logan corner Harbours.....         | " 5     | 6" .....  | 1       | 1         | Recaulked joint .....               | Joint blown out.            |
| Dorchester opp. Mark .....         | " 7     | .....     | 1       | 1         | Repaired hydrant rod .....          | Hydrant rod broken.         |
| Champ de Mars cor. Lacroix.....    | " 8     | .....     | 1       | 1         | Put in new valve .....              | Hyd. valve leaking worn out |
| Sherbrooke corner Drummond...      | " 9     | .....     | 1       | 1         | " " .....                           | " " .....                   |
| Champ de Mars east Bonsecours      | " 10    | .....     | 1       | 1         | " " .....                           | " " .....                   |
| Manufacturers and Dargenson...     | " 11    | .....     | 1       | 1         | " " .....                           | " " .....                   |
| St. Patrick corner Charlevoix....  | " 12    | .....     | 1       | 1         | " " .....                           | " " .....                   |
| St. Catherine cor. McGill Col. Av. | " 14    | .....     | 1       | 1         | " " .....                           | " " .....                   |
| Plessis south of Ontario.....      | " 15    | .....     | 1       | 1         | " " .....                           | " " .....                   |
| Duke street south of Wellington    | " "     | .....     | 1       | 1         | " " .....                           | " " .....                   |
| Wellington corner Bourgeois.....   | " 16    | .....     | 1       | 1         | " " .....                           | " " .....                   |
| Cote des Neigs cor. Summerhill     | " 17    | .....     | 1       | 1         | " " .....                           | " " .....                   |
| Lagauchetiere corner Wolfe.....    | " 18    | .....     | 1       | 1         | " " .....                           | " " .....                   |
| Windsor near St. James.....        | " 19    | 4" .....  | 1       | 1         | Put in new piece pipe .....         | Pipe broken.                |
| Champ de Mars.....                 | " 21    | .....     | 1       | 1         | Put in new valve.....               | Hyd. valve leaking worn out |
| St. Catherine west of Mance.....   | " 23    | 6" .....  | 1       | 1         | Put in new piece 6 inches. ....     | Main split about 4 f. long. |
| Notre Dame corner Chatham...       | " 24    | .....     | 1       | 1         | Put in new valve.....               | Hyd. valve leaking worn out |
| Duluth Av. corner Mitchison.....   | " 26    | .....     | 1       | 1         | " " .....                           | " " .....                   |
| Pipe track .....                   | " 28    | 24" ..... | 1       | 1         | Cleaned and oiled valve 24 in. .... | Main old and broken.        |
| St. Alexander off St. Catherine... | " 30    | 4" .....  | 1       | 1         | Put in piece 4 inch pipe .....      | Old packing worn out.       |
| " corner Lagauchetiere             | " 31    | 4" .....  | 1       | 1         | Repacked 4 inch valve .....         | Hyd. valve leaking worn out |
| Guy south of Dorchester.....       | "       | .....     | 1       | 1         | Put in new valve.....               | " " .....                   |
| Grand Trunk south Laprairie.....   | April 1 | .....     | 1       | 1         | " " .....                           | " " .....                   |
| Arthur corner Shuter.....          | " 2     | .....     | 1       | 1         | " " .....                           | " " .....                   |
| .....                              | " 4     | 10" ..... | 1       | 1         | Recaulked joint .....               | Joint blown out.            |



LIBRARY  
T. T. LENOX  
T. T. FOUNDATIONS



| Way                                   | 7'font'n. | Altering 10 in. pipe in Basin         |                              |
|---------------------------------------|-----------|---------------------------------------|------------------------------|
| Papineau square.....                  | 7 10"     | Changing stone for iron frame.....    | Hydrant valve worn out.      |
| Notre-Dame and St. Sulpice.....       | 7         | Put in new valve.....                 | " "                          |
| Ontario corner Iberville.....         | 9         | " "                                   | Joint blown out.             |
| St. Ursula below Vitre.....           | 9 1"      | Recaulked joint.....                  | " "                          |
| Aqueduct at R. R. Crossing.....       | 9         | " "                                   | Hydrant valve worn out.      |
| Versailles.....                       | 10        | Put in new valve.....                 | " "                          |
| Summer Hill avenue.....               | 11        | " "                                   | " "                          |
| Duluth Av and Calicieux.....          | 11        | " "                                   | " "                          |
| St. Peter corner Commissioners..      | 11        | " "                                   | " "                          |
| Cote des Neiges road.....             | 11        | " "                                   | " "                          |
| Linnaea corner William.....           | 12        | Cleaning valve spindle.....           |                              |
| College corner McGill.....            | 12        | Repaired leak on pipe to hydrant..... |                              |
| Dorchester near Beaver Hall.....      | 10        | Recaulked joint.....                  | Joint blown out.             |
| Iberville corner Logan.....           | 13        | Changing position of hydrant.....     | To suit line of street.      |
| Notre-Dame corner of Deseré.....      | 14        | Drain put to hydrant.....             |                              |
| Notre-Dame St. opposite 161.....      | 14        | " "                                   |                              |
| Fountain Place d'Armes squ re.        | 16        | Cleaning drain from fountain.....     |                              |
| DeBrosles cor. of St. Dizier.....     | 18        | Put in new valve.....                 | Hydrant valve worn out.      |
| Notre-Dame corner Voltigeurs.....     | 18        | Put in new column to hydrant.....     | Hydrant column split.        |
| Notre-Dame corner Seigneurs.....      | 4         | Joint recaulked.....                  | Leaking.                     |
| Napoleon cor. St. Lawrence.....       | 10        | Put in new one.....                   | Valve no use.                |
| Dorchester E. of St. Elizabeth.....   | 19        | Recaulked joint.....                  | Joint blown out.             |
| Simpson east.....                     | 20        | Put in new valve.....                 | Hydrant valve worn out.      |
| Liverpool cor. Coleraine.....         | 20        | Repaired.....                         | Hand hole in brass of hyd't. |
| Dorchester corner Cathedral.....      | 21        | Joint recaulked.....                  | Joint leaking.               |
| Sherbrooke corner Shaw.....           | 21        | Put new valve in.....                 | Hydrant worn out.            |
| Craig corner Cote.....                | 3         | " "                                   | " "                          |
| Greenshields Lane.....                | 23 30"    | Recaulked joint.....                  | Joint leaking.               |
| Notre-Dame corner Seigneurs.....      | 24        | Rebuilt hydrant chamber.....          |                              |
| Sherbrooke cor. St. Famille.....      | 24        | Attach. cog wheels to work valve..... |                              |
| Conway at River Side.....             | 25 6"     | Put in new valve.....                 | Hydrant valve worn out.      |
| Hanover corner Belmont.....           | 25        | Took away valve.....                  |                              |
| Youville corner St. Peter.....        | 26        | Put in spindle.....                   | Spindle broken.              |
| St. Catharine corner St. Phillip..... | 26        | Put in new valve.....                 | Hydrant valve worn out.      |
| Notre-Dame corner Dupré Lane.....     | 10" Main  | Recaulked joint.....                  | Joint leaking.               |

No. 8 *Cont'd*—Schedule showing the Repairs done to Main Pipes, Hydrants and Valves during year 1892.

| POSITION.                            | DATE.  | Diameter. | Valves. | Hydrants. | HOW REPAIRED.                            | Probable cause of injury. |
|--------------------------------------|--------|-----------|---------|-----------|--|---------------------------|
| Seigneurs corner St. James . . . . . | May 27 | .....     | ..      | 1         | Repaired hydrant chamber.....            | Old chamber.              |
| Sussex corner Quiblier.....          | " 28   | .....     | 1       | ..        | Raising valve cover.....                 | Raising street grad'.     |
| St. James corner Windsor.....        | " 30   | 4" .....  | ..      | ..        | Recalked joint.....                      | Joint blown out.          |
| Canal corner St. Etienne.....        | " ..   | .....     | ..      | 1         | Put in new valve.....                    | Hydrant valve worn out.   |
| Ontario corner Beaudry.....          | " 31   | .....     | ..      | 1         | Raised hydrant to new level.....         | Street grade raised.      |
| Bleury corner Dorchester.....        | June 1 | .....     | ..      | 1         | Put in new valve.....                    | Hydrant valve worn out.   |
| Notre-Dame cor. Place d'Armes..      | " 1    | .....     | ..      | 1         | " .....                                  | " ..                      |
| Shaw below Ontario.....              | " 2    | .....     | ..      | 1         | Raising hydrant to level of street....   | Street grade raised.      |
| Desalaberry corner Craig.....        | " 2    | 4" .....  | 1       | ..        | Put in new spindle.....                  | Spindle broken.           |
| Lagauchetiere corner Bleury....      | " 3    | .....     | 1       | 1         | Put in new valve.....                    | Hydrant valve worn out.   |
| College corner Inspectors... ..      | " 3    | 10" ..... | 1       | ..        | " " spindle 10 in.....                   | Spindle broken.           |
| Dorchester near Essex.....           | " 4    | 6" Main.. | ..      | ..        | " " piece .....                          | Piece blown out.          |
| Ottawa corner McCord.....            | " 4    | 10" ..... | 1       | ..        | " " iron frame over valve.....           | Removed wooden one.       |
| (Ontario av. corner Sherbrooke...)   | " 6    | .....     | ..      | 1         | " " valve.....                           | Hydrant valve worn out.   |
| Dubord corner Berri.....             | " 6    | 1" .....  | ..      | ..        | " " piece.....                           | Main broken.              |
| Albert at Masterman .....            | " 7    | .....     | ..      | 1         | " " valve.....                           | Hydrant valve worn out.   |
| Atwater Av. corner Sherbrooke...     | " 7    | 12" ..... | 1       | ..        | Repaired valve.....                      | Old packing worn out.     |
| Workman corner Kulford.....          | " 8    | .....     | ..      | 1         | Put in new valve.....                    | Hydrant valve worn out.   |
| Dows Brewery yard.....               | " 8    | .....     | ..      | 1         | " " .....                                | " ..                      |
| McGill below Foundling.. ..          | " 9    | .....     | ..      | 1         | " " .....                                | " ..                      |
| St. Maurice street.....              | " 9    | .....     | ..      | 1         | " " .....                                | " ..                      |
| Ontario corner Visitation.....       | " 9    | .....     | ..      | 1         | Raised hydrant to new level.....         | Street grade raised.      |
| Amherst corner Mignonne.....         | " 10   | 6" .....  | ..      | ..        | Oiled valve spindle.....                 | " ..                      |
| Logan corner Poupart.....            | " ..   | .....     | 1       | ..        | Raised valve stone .....                 | " ..                      |
| Inspectors corner William .....      | " 11   | .....     | 1       | ..        | " " .....                                | " ..                      |
| Notre-Dame corner Papineau .....     | " 13   | .....     | 1       | ..        | Put on iron crosses inst'd of v've stone | Valve stones removed.     |



No. 8 *Cont'd*—Schedule showing the Repairs done to Main Pipes, Hydrants and Valves during year 1892.

| POSITION.                          | DATE. | Diameter of mains. | Valves. | Hydrants. | HOW REPAIRED                        | Probable cause of injury.   |
|------------------------------------|-------|--------------------|---------|-----------|-------------------------------------|-----------------------------|
| Murray n s. of William street ..   | July  | 4 1/2"             | .....   | 1         | Renewed spindle.....                | Old one broken.             |
| Notre-Dame and Seigneurs.....      | "     | 5                  | .....   | 1         | Put in new valve.....               | Hydrant valve worn out.     |
| Latour street.....                 | "     | 5                  | .....   | 1         | "                                   | "                           |
| Duluth Av. and Cadieux .....       | "     | 6                  | .....   | 1         | "                                   | "                           |
| St. Dominique and Rachel.....      | "     | 6                  | .....   | 1         | Repacked 4 in. valve.....           | Packing worn out.           |
| Ontario and Papineau.....          | "     | 7 1/2"             | .....   | 1         | Renewed 6 in. spindle.....          | Old one                     |
| St. Mark corner Tupper.....        | "     | 7 1/2"             | .....   | 1         | "                                   | Thread stripped.            |
| Dorchester Cathedral.....          | "     | 8                  | .....   | 1         | Changing position of hydrant .....  | To new line of footpath.    |
| McGill College Av. & St. Catherine | "     | 8 1/2"             | .....   | 1         | 24 in. Rebuilt valve chamber.....   | Old one dangerous.          |
| Ontario and St. Hubert .....       | "     | 9                  | .....   | 1         | Putting valve cover.....            | To new level of street      |
| Mignonne and Parthenais .....      | "     | 9 1/2" Main        | .....   | 1         | Putting bonnet on 12 in. pipe ..... | Bonnet blown off 12" pipe.  |
| Dorchester and Cathedral .....     | "     | 9                  | .....   | 1         | Lowering valve stone .....          | To level of street.         |
| German opp No. 80 .....            | "     | 11                 | .....   | 1         | Put band on 4 in. pipe.....         | Hole in main pipe worn away |
| Vitre corner St. Dominique.....    | "     | 11 1/2"            | .....   | 1         | Renewed 6 in. spindle.....          | Spindle stripped            |
| St. Constant s. s. of Mignonne...  | "     | 11                 | .....   | 1         | Repacked 4 in. valve .....          | Packing worn out.           |
| St. James west of Cathedral.....   | "     | 12                 | .....   | 1         | Put in new valve .....              | Hydrant valve worn out.     |
| Visitation and St. Catharina.....  | "     | 12                 | .....   | 1         | "                                   | "                           |
| University opp Prince, Arthur...   | "     | 12                 | .....   | 1         | "                                   | "                           |
| Robin and Montcalm .....           | "     | 13                 | .....   | 1         | "                                   | "                           |
| Nazareth and Common .....          | "     | 13                 | .....   | 1         | "                                   | "                           |
| Panel and St. Rose.....            | "     | 13                 | .....   | 1         | "                                   | "                           |
| McCord and Murray .....            | "     | 14                 | .....   | 1         | "                                   | "                           |
| Hiv. rsde and Britannia .....      | "     | 14                 | .....   | 1         | "                                   | "                           |
| St. Rose and Visitation .....      | "     | 14                 | .....   | 1         | Repacked 4 in valve.....            | Old packing worn out.       |
| Hedpath and Pine Av.....           | "     | 15                 | .....   | 1         | "                                   | "                           |
| St. Therèse and St. Vincent.....   | "     | 15                 | .....   | 1         | "                                   | "                           |
| .....                              |       |                    |         |           |                                     |                             |

|                                  |      |          |   |   |                                  |                              |
|----------------------------------|------|----------|---|---|----------------------------------|------------------------------|
| Dorchester and Amherst.....      | "    | 18 10"   | 1 | 1 | Renewed 10 in. spindle .....     | 11 in one worn out.          |
| Mignonne and Amherst.....        | "    | 18 12"   | 1 | 1 | " 12 in. ....                    | "                            |
| Dorchester and St Urbain .....   | "    | 18 10"   | 1 | 1 | Recaulked joint.....             | Joint blown out.             |
| Mill E. of Weir .....            | "    | 19 10"   | 1 | 1 | Renewed 10 in. spindle .....     | Old spindle worn out.        |
| Lagauchetiere and Bleury .....   | "    | 19 ..... | 1 | 1 | Put in new valve.....            | Hydrant valve worn out.      |
| Jurors opp. Anderson .....       | "    | 19 ..... | 1 | 1 | " .....                          | "                            |
| Robin and Montcalm. ....         | "    | 20 ..... | 1 | 1 | " .....                          | "                            |
| V. tré and Sanguinet.....        | "    | 20 ..... | 1 | 1 | " .....                          | "                            |
| Lagauchetiere and St. Dominique  | "    | 21 ..... | 1 | 1 | " .....                          | "                            |
| Wellington and Farm .....        | "    | 22 ..... | 1 | 1 | " .....                          | "                            |
| Roy corner Notre-Dame.....       | "    | 22 ..    | 1 | 1 | Put in new iron valve cover..... | Old stone removed.           |
| Logan and Champlain.....         | "    | 23 ..... | 1 | 1 | Rebuilt hydrant chamber....      | Old age.                     |
| St. Peter and St. Paul.....      | "    | 23 ..... | 1 | 1 | Repacked valve.....              | Old packing worn out.        |
| St. Marc and St. Catherine.....  | "    | 25 1"    | 1 | 1 | Put in new spindle.....          | Old spindle                  |
| Atwater Av. near W. House .....  | "    | 26 10"   | 1 | 1 | Put in new breeches pipe .....   | Old one split by excess pers |
| Wellington corner Ann.....       | "    | " .....  | 1 | 1 | Put in new valve.....            | Hydrant valve worn out.      |
| St. Patrick 1st hydrant.....     | "    | 27 ..... | 1 | 1 | " .....                          | "                            |
| Rivard and Berri .....           | "    | 28 ..... | 1 | 1 | " iron frame.....                | Old stone removed.           |
| " and Rachel .....               | "    | 29 ..... | 1 | 1 | " .....                          | "                            |
| Longueuil lane and Notre-Dame.   | "    | 30 ..... | 1 | 1 | " .....                          | "                            |
| Atwater Av. and St. Catherine..  | "    | 12"      | 1 | 1 | Recaulked joint.....             | 12 in. joint blown out.      |
| Dubord and Sanguinet.....        | Aug. | 1 .....  | 1 | 1 | Raised valve gate.....           | Valve gate down.             |
| Wellington and Nazareth.....     | "    | 1 ..     | 1 | 1 | Put in new valve.....            | Hydrant valve worn out.      |
| St. Paul and St. Nicholas.....   | "    | 2 .....  | 1 | 1 | " .....                          | "                            |
| Common near Prince. ....         | "    | 2 6"     | 1 | 1 | Recaulked joint.....             | 1 in. joint blown out.       |
| Commissioners and Jac.-Cartier.. | "    | 3 .....  | 1 | 1 | Put in new valve .....           | Hydrant valve worn out.      |
| Richmond and Richardson.....     | "    | 3 ..     | 1 | 1 | " piece.....                     | Hole in pipe to hydrant.     |
| Lagauchetiere and Cathedral..... | "    | 4 .....  | 1 | 1 | Repacked valve.....              | Old packing worn out.        |
| Dominion street .....            | "    | 4 12"    | 1 | 1 | Recaulked joint.....             | 12 in. joint blown out.      |
| Mullins street .....             | "    | 5 .....  | 1 | 1 | Put in new valve.....            | Hydrant valve worn out.      |
| Atwater Av. corner Centre.....   | "    | 5 10"    | 1 | 1 | " 30 in. breeches .....          | Old one split                |
| Island at Railway crossing.....  | "    | 6 .....  | 1 | 1 | " valve.....                     | Hydrant valve worn out.      |
| Ontario and Iberville .....      | "    | 6 6"     | 1 | 1 | Recaulked joint.....             | Joint blown out.             |

No 8 (cont'd)—Schedule showing the Repairs done to Main Pipes, Hydrants and Valves during year 1898.

| POSITION                         | DATE | DEPTH  | VALVE | HOW REPAIRED                           | Probable cause of injury.  |
|----------------------------------|------|--------|-------|--|----------------------------|
| Commo and Prince.....            | Aug. |        |       | Recaulked joint.....                   | Joint blown out            |
| Lagauchetiere and St. Margaret   |      |        |       | Rebuilt hydrant chamber.....           | In bad order               |
| Atwater Ave and St. Catherine    |      |        |       | Recaulked joint.....                   | 12 in. joint blown out.    |
| Beaus app Cap and L.....         | "    | 9 1/2  |       | Put in 1 foot 2 1/2 in pipe.....       | Pipe split and k.          |
| Charlottesburg.....              | "    | 4      |       | Repacked valve chamber.....            | Abandoned                  |
| Aqueduct and N. Deschamps        | "    | 10     |       | Repacked valve.....                    | Old packing worn out.      |
| Richmond.....                    | "    | 0      |       | "                                      | "                          |
| Versailles.....                  | "    | 0 1/2  |       | "                                      | "                          |
| Charley and Grand Trunk          | "    | 10     |       | Put in new valve.....                  | Hydrant valve worn out.    |
| St. Catherine corner Sussex..... | "    |        |       | "                                      | "                          |
| Shelburne.....                   | "    | 12     |       | "                                      | "                          |
| " St. Mary                       | "    |        |       | "                                      | "                          |
| " Mansfield                      | "    |        |       | "                                      | "                          |
| Wellington at Subway.....        | "    | 10     |       | "                                      | "                          |
| Carlton at St. N.....            | "    |        |       | Moved hydrant to line of footpath..... | Changing line of footpath. |
| St. James corner St. George      | "    |        |       | Put in new valve.....                  | Hydrant valve worn out.    |
| N. Dame opp. Baldwin             | "    |        |       | "                                      | "                          |
| " Corner Marlboro                | "    |        |       | "                                      | "                          |
| St. Lawrence corner Ontario..... | "    | 14 1/2 |       | Put in new iron frame.....             | Removed wooden frame.      |
| Amherst below St. Catherine.     | "    | 10     |       | Raised valve cover to new level.....   | Street grade changed.      |
| Inspectors corner Chalouet sq.   | "    | 10     |       | Put in new iron frame.....             | Old valve stone removed.   |
| St. Genevieve corner St. Antoine | "    | 10     |       | "                                      | " wood removed.            |
| Sanguin and Rachel.....          | "    | 4      |       | Raised valve cover to level of street. | Street grade changed       |
| Latour and St. Genevieve.....    | "    | 0      |       | Rebuilt valve chamber.....             | Old one falling in.        |
| Roy and Brolet.....              | "    | 15     |       | Put in new spindle.....                | Old spindle drained        |
| Notre-Dame corner Guy.....       | "    | 10     |       | Repacked valve.....                    | Old packing worn out.      |
| Sherbrooke corner Redpath.....   | "    | 10     |       | Repacked valve.....                    | Hydrant valve worn out     |

| Wellington corner Colborne.....      | Aug. 16 | ..... | Put in new valve.....              | Hydrant valve worn out.    |
|--------------------------------------|---------|-------|------------------------------------|----------------------------|
| <i>St. Dominique and Rachel.....</i> | "       | ..... | <i>Put in new valve stone.....</i> | <i>Removed wood one.</i>   |
| <i>Drolet corner Rachel.....</i>     | 17      | ..... | "                                  | "                          |
| Berri corner Roy .....               | "       | ..... | "                                  | "                          |
| Mary-Ann and St. Denis.....          | 18      | ..... | "                                  | "                          |
| Drolet and Mount-Royal Av.....       | 19      | ..... | "                                  | "                          |
| Pantaleon and Napoleon.....          | 20      | ..... | "                                  | "                          |
| St. Lawrence corner St. Cather...    | "       | ..... | Moved valve cover.....             | To suit electric rails.    |
| Stanley corner St. Catherine.....    | 22      | 4"    | Repacked valve.....                | Old packing worn out.      |
| Amherst corner LaGauchetiere...      | "       | ..... | "                                  | "                          |
| Sherbrooke corner St. Matthew..      | "       | ..... | Put in new bolt.....               | Bolt broken.               |
| Atwater Av. corner Notre Dame.       | 23      | 24"   | Recaulked 3 joints.....            | 3 24 in. joints blown out. |
| Pine Av. corner Drolet.....          | "       | ..... | Put in new valve.....              | Cut by stones pipe.        |
| McTavish opp. Carleton Road....      | 24      | 20"   | Recaulked joint.....               | 20 in. joint blown out.    |
| Notre-Dame and Marlboro .....        | "       | ..... | Cleaned drain.....                 | Hydrant drain chocked.     |
| Commissioners at C. H. Square...     | 25      | ..... | Put in new valve.....              | " valve worn out.          |
| Wellington corner Colborne.....      | "       | ..... | "                                  | "                          |
| St. James corner St. Gabriel.....    | "       | ..... | "                                  | "                          |
| St. Martin S. S. Notre-Dame.....     | "       | ..... | Repacked valve..                   | Old packing worn out.      |
| Pr-fontaine ab. Logan.....           | 26      | ..... | Put in new valve.....              | Hydrant valve cut by stor  |
| St. Catherine corner Dezery.....     | "       | ..... | " washer.....                      | Washer on hyd.col. worn o  |
| Park Av. corner Sherbrooke.....      | "       | ..... | Moved valve cover.....             | To suit Electric Railw.    |
| Chaboillez Square near Albert...     | 27      | 12"   | "                                  | "                          |
| Rachel corner Papineau.....          | "       | ..... | Put in stone cover.....            | Removed old wood one.      |
| " " Sydenham.....                    | "       | ..... | "                                  | "                          |
| " and Durham.....                    | "       | ..... | "                                  | "                          |
| St Louis square at Laval Av.....     | 28      | ..... | "                                  | "                          |
| Rivard corner Duluth Av.....         | "       | ..... | "                                  | "                          |
| Cadieux " Prince Arthur.....         | "       | ..... | "                                  | "                          |
| Amherst corner Sherbrooke.....       | "       | ..... | Moved valve cover.....             | To suit Electric Railway.  |
| Mount-Royal Park.....                | 29      | ..... | Put in new valve .....             | Hydrant valve worn out.    |
| King and Common. ....                | "       | 1"    | " spindle.....                     | Old spindle stripped       |
| Sherbrooke opp. McGill College..     | 30      | ..... | " valve .....                      | Hydrant valve worn out.    |
| Lafontaine corner Maisonneuve..      | "       | ..... | "                                  | "                          |
| Notre Dame corner Murray.....        | "       | ..... | "                                  | "                          |

No. 8 *Cont'd*—Schedule showing the Repairs done to Main Pipes, Hydrants and Valves during year 1892.

| POSITION.                          | DATE.   | Diameter. | Valves. | Hydrants. | HOW REPAIRED.                     | Probable cause of injury.   |
|------------------------------------|---------|-----------|---------|-----------|-----------------------------------|-----------------------------|
| King south of Wellington .....     | Aug. 31 | 4"        | 1       | 1         | Repacked valve .....              | Old packing worn out.       |
| Wellington corner Farm .....       | " "     | "         | 1       | 1         | Put on new washer .....           | Washer on hydrant col. cut. |
| Inspectors opp. 78 .....           | " "     | 4"        | 1       | 1         | " in " piece .....                | Selling across a boulder.   |
| Wolfe south side of Craig .....    | " "     | 6"        | 1       | 1         | Repacked valve .....              | Old packing worn out.       |
| Papineau Av. north side Craig ..   | " "     | 10"       | 1       | 1         | " .....                           | Old packing worn out.       |
| St. Etienne at G. T. Offices ..... | " "     | "         | 1       | 1         | Put in new valve .....            | Hydr. valve cut by stone.   |
| St. Alexander and Jurors .....     | " "     | "         | 1       | 1         | Tightened valve rod .....         | " rod loose and leaking.    |
| Lagauchetiere corner Bleury .....  | " "     | "         | 1       | 1         | " " .....                         | " " "                       |
| Peel bel. Pine Av. ....            | " "     | 6"        | 1       | 1         | Raised 6 in. main .....           | To allow drain to pass.     |
| Poupart corner Logan .....         | Sept. 1 | "         | 1       | 1         | Put on new valve stone .....      | Removed wooden one.         |
| St. Martin S. side Notre Dame ..   | " "     | "         | 1       | 1         | Rebuilt valve chambers .....      | Old chambers falling in.    |
| Iberville corner Mignonne .....    | " "     | "         | 1       | 1         | Put in new valve stone .....      | Removed wooden one.         |
| Darling corner St. Catherine ..... | " "     | "         | 1       | 1         | " " .....                         | " " "                       |
| Dezery " Mignonne .....            | " "     | "         | 1       | 1         | " " .....                         | " " "                       |
| Latour " St. Monique .....         | " "     | "         | 1       | 1         | " " .....                         | " " "                       |
| Maple " Itach .....                | " "     | "         | 1       | 1         | Raising valve stone .....         | To grade of streets.        |
| Marlboro and St. Catherine .....   | " "     | "         | 1       | 1         | Put in new valve stone .....      | Removed wooden one          |
| Moreau and Lafontaine .....        | " "     | "         | 1       | 1         | " " .....                         | " " "                       |
| Prince opp. 60 .....               | " "     | 4"        | 1       | 1         | Put in new piece 4 in. pipe ..... | Piece blown out.            |
| Ottawa corner Shannon .....        | " "     | "         | 1       | 1         | Caulked hydrant joint .....       | Joint "                     |
| Park Av. ....                      | " "     | "         | 1       | 1         | Moved hydrants .....              | To suit Electric Railway.   |
| St. Catherine corner Fort .....    | " "     | "         | 1       | 1         | Reculped joints .....             | Joint blown out.            |
| Lagauchetiere " Bleury .....       | " "     | 12"       | 1       | 1         | Put in new valve .....            | Hydrant valve worn out.     |
| Wellington near subway .....       | " "     | "         | 1       | 1         | " " .....                         | " " "                       |
| Queen corner Wellington .....      | " "     | 6"        | 1       | 1         | Put in new spindle .....          | Old spindle stripped.       |
| St. Elizabeth corner Craig .....   | " "     | 6"        | 1       | 1         | " " .....                         | " "                         |



|  |    |           |                               |                            |
|--|----|-----------|-------------------------------|----------------------------|
| Jac.-Cartier Square and St. Paul Sept. | 7  | .....     | Put in new hydrant valve..... | Hydrant valve worn out.    |
| Duluth Av. corner Rivard "             | 7  | .....     | " "                           | " "                        |
| Delorimier Av. corner Ontario...       | 8  | .....     | Put in 2 noz. hydrant.....    | Took out old taper hydrant |
| St. Phillip str et. A. ....            | 8  | 4" .....  | Recaulked joint.....          | Joint blown out.           |
| Guy at St. Antoine.....                | 9  | .....     | Put in new valve .....        | Hydrant valve worn out.    |
| Logan corner Morneau.....              | 9  | .....     | " " " stone.....              | Removed wooden one.        |
| Peel near Reservoir.....               | 10 | .....     | " " " " .....                 | " " "                      |
| St. Lawrence corner Rachel.....        | "  | .....     | " " " " .....                 | " " "                      |
| Kulford corner Notre Dame.....         | "  | .....     | Relaying hydrant cover.....   | Cover too loose.           |
| Guy corner Notre Dame.....             | "  | .....     | " " " " .....                 | " " "                      |
| Mignonne corner St. Lawrence...        | 12 | 12" ..... | Put in new spindle .....      | Old spindle twisted.       |
| St. Lawrence at Mignonne.....          | "  | .....     | Put in new rod.....           | Hydr't rod broken.         |
| Craig corner Wolfe.....                | "  | .....     | " " valve.....                | " valve worn out.          |
| Allard corner Visitation.....          | 13 | 4" .....  | " " spindle.....              | Old spindle broken.        |
| Visitation corner Mignonne.....        | "  | .....     | " " valve.....                | Hydrant valve worn out.    |
| Fortification Lane.....                | "  | .....     | Cleaned valve.....            | Valve gate choked.         |
| Cadieux corner Duluth Av.....          | 14 | .....     | Put in new valve.....         | Hydrant valve worn out.    |
| Lagauchetiere corner Wolfe....         | "  | .....     | " " .....                     | " " "                      |
| Drummond corner Dorchester....         | "  | .....     | Repacked " .....              | Old packing "              |
| Wellington " Magdalen.....             | "  | .....     | Put in new " .....            | Hydrant valve "            |
| Park Av. corner Mount Royal Av         | 15 | .....     | " " " .....                   | " " "                      |
| Commissioners corner J.-C. Sqr..       | "  | .....     | " " taper to hydrant.....     | Old one out of order.      |
| St. James and Lusignan.....            | "  | .....     | " " stone.....                | Removed wooden one.        |
| Sherbrooke and University.....         | 16 | .....     | " " " .....                   | " " "                      |
| Ontario and Harbour.....               | "  | .....     | " " " .....                   | " " "                      |
| " corner St. Chs.-Borromet             | "  | .....     | Moving hydrant.....           | To new line of street.     |
| " " Maisonneuve....                    | "  | .....     | Taking away hydrant.....      | Not required.              |
| Bleury " Dowd.....                     | 17 | .....     | " " .....                     | " "                        |
| Moreau " Marlboro .....                | "  | .....     | Put on new valve stone.....   | Removed wooden cover.      |
| " and Robillard.....                   | 18 | .....     | " " " .....                   | " " "                      |
| " corner Korsyth.....                  | "  | 4" .....  | Lowering 4 in. main .....     | To allow drain to pass.    |
| Mignonne and Iberville.....            | "  | .....     | Put on new valve stone.....   | Removed wooden cover.      |
| Mountain S. S. of St. James....        | 19 | 12" ..... | Tightened valve gate.....     | Nut in valve gate loose.   |
| Common corner Port.....                | "  | .....     | Put in new valve.....         | Hydrant valve worn out.    |
| Brennan " Prince.....                  | "  | .....     | " " " .....                   | " " "                      |

No. 8 *Cont'd*—Schedule showing the Repairs done to Main Pipes, Hydrants and Valves during year 1892.

| POSITION.                                | DATE.    | Diameter | Valves. | Hydrants. | HOW REPAIRED.                         | Probable cause of injury.      |
|--|----------|----------|---------|-----------|---------------------------------------|--------------------------------|
| Berri corner Dorchester .....            | Sept. 19 | .....    | 1       | ..        | Repacked 4 in. valve .....            | Packing worn out.              |
| Beaudry corner Robin .....               | " 20     | ....     | ....    | 1         | Put new valve in .....                | Hydrant valve worn out.        |
| Dorchester " Blury .....                 | " "      | .....    | ....    | 1         | Putting drain to hydrant .....        |                                |
| Mance corner Milton. ....                | " 21     | .....    | ..      | 1         | Repaired rod .....                    | Hydrant rod crooked.           |
| St. Famille at Prince Arthur .....       | " 22     | 10"      | 1       | ...       | Easing spindle .....                  |                                |
| Commissioners at C. P. R. Elevator ..... | " "      | ....     | ....    | 1         | Dug to put new gasket .....           | { Rubber packing on bottom     |
| Lagauchetiere and Plessis .....          | " 23     | .....    | ....    | 1         | Recaulked 2 joints .....              | { of column of hyd. leaking.   |
| Ontario and Moreau .....                 | " "      | .....    | ....    | 1         | Put in new valve .....                | { joints b'n out on hyd. pipe. |
| Albert corner Mountain .....             | " 24     | .....    | 1       | ...       | Put new stone cover .....             | Hydrant valve worn out.        |
| Rose " Maisonneuve .....                 | " 26     | .....    | ....    | 1         | Recaulked joint .....                 | Wood cover removed.            |
| Charron and Wellington .....             | " "      | .....    | 1       | ...       | Renewed spindle .....                 | Joint blown out.               |
| Park Av. opp. Duluth Av. ....            | " 27     | .....    | ....    | 1         | Put in new valve .....                | Spindle broken.                |
| Park near Mount-Royal Av. ....           | " "      | .....    | ....    | 1         | Moving hydrant opp. side street. .... | Hydrant valve worn out.        |
| Craig corner German .....                | " "      | .....    | ....    | 1         | Put in new valve .....                | (In acct. being too near fence |
| Ontario " Maisonneuve .....              | " 28     | .....    | ....    | 1         | " " .....                             | Hydrant valve worn out.        |
| St. Catherine corner Cuvillier .....     | " 29     | .....    | ....    | 1         | " " .....                             | " "                            |
| 77 Visitation street .....               | " "      | 1"       | ....    | ...       | Lowering 4 in. main .....             | " "                            |
| McGill College Av. cor. St. Cather       | " "      | 12"      | ....    | ...       | Recaulked joint .....                 | To allow drain to pass.        |
| Pine Av. cor. Durocher .....             | " "      | "        | ....    | ...       | { Protecting 12 inch main H. L. by    | Joint blown out by pressure.   |
| Bronsdon Lane .....                      | " 30     | 4"       | ....    | ...       | { wood casing .....                   | { Road Department blasting     |
| St. Catherine and Cuvillier .....        | " "      | .....    | ....    | ...       | Recaulked joint .....                 | { under ground.                |
| Albert street at Masterman .....         | " "      | .....    | ....    | 1         | Recaulk'd 8 in. joint .....           | Joint blown out by pressure.   |
| Harbour below Ontario .....              | " "      | .....    | ....    | 1         | Put in new valve .....                | Joint to hydrant blown.        |
| Radieux street .....                     | " "      | .....    | ....    | 1         | Lower'd hydrant .....                 | Valve worn out.                |
|  | " "      | .....    | ....    | 1         | Painted H. L. hydrant to pwhite ..... | Street grade lowered.          |

| Line | Locality   | Size | Material | Remarks                              | Notes                       |
|------|--|------|----------|--------------------------------------|-----------------------------|
| 1    | Line Av. and Hurocher                            | 30   | 12"      | Protecting H. L. main by wood cast'g | Valve worn out.             |
| 1    | St. Elizabeth between Dorchester & St. Catherine | 1    | .....    | Put in new valve                     | Street grade lowered.       |
| 1    | Harbour above Lafontaine                         | 1    | .....    | Lowering hydrant                     | To level of street          |
| 1    | Albert street at Masterman                       | 1    | .....    | Raised hydrant                       | Hydrant valve worn out.     |
| 1    | St. Bernard street                               | 1    | .....    | Put in new valve                     | (Old spindle broken.        |
| 1    | St. Urbain and Craig                             | 16"  | .....    | " spindle                            | Valve worn out.             |
| 3    | Corner Ontario and St. Hubert                    | 3    | .....    | " valve                              | Valve worn out.             |
| 3    | Ontario at subway                                | 3    | 24"      | Discont'd 24 in. drain at subway     | Blown out.                  |
| 3    | Corner Bleury and Edward                         | 3    | .....    | Put in new valve                     | Old one worn out.           |
| 3    | Seigneurs and William                            | 3    | 4"       | Recalcul'd joint (4 inch)            | Joint blown out.            |
| 4    | Bruchési and Notre Dame                          | 4    | 4"       | Put in new valve                     | "                           |
| 4    | 246 Aqueduct                                     | 4    | 4"       | Recalcul'd joint                     | Sunk by settling.           |
| 4    | Common near St. Nicholas                         | 4    | 6"       | "                                    | Valve worn out.             |
| 4    | 34 King street                                   | 4    | .....    | Raised hydrant chamber               | Old packing worn out.       |
| 4    | Canning and St. James                            | 4    | .....    | Put in new valve                     | "                           |
| 5    | Peel and Sherbrooke                              | 5    | 4"       | Repacked valve                       | Sunk by settling.           |
| 5    | Stanley and "                                    | 5    | 4"       | "                                    | Valve worn out.             |
| 5    | Visitation and Mignonne                          | 5    | .....    | Raised hydrant chamber               | Old one shipped by forcing. |
| 5    | Albert and Bruchési                              | 5    | .....    | Put in new valve                     | " broken defect. cast'g     |
| 5    | Fortier " Cadieux                                | 5    | .....    | " drain to hydrant                   | Joint blown out             |
| 5    | Corner Magdalen and Pavard                       | 5    | 1"       | " new spindle                        | "                           |
| 5    | Wellington and Magdalen                          | 5    | 4"       | "                                    | Old packing worn out.       |
| 6    | Notre-Dame off Dufresne                          | 6    | 10"      | Recalcul'd joints                    | "                           |
| 6    | 686 Dorchester                                   | 6    | "        | "                                    | Old packing worn out.       |
| 6    | Mullins corner Wellington                        | 6    | 1"       | Repacked valve                       | one broken defect. cast'g.  |
| 7    | 53 Park Av.                                      | 7    | 20"      | Put in new length                    | Old packing worn out.       |
| 7    | Corner Cadienx and Napoleon                      | 7    | .....    | " valve                              | Not required.               |
| 7    | Ahmerst and Mignonne                             | 7    | .....    | Took out hydrant                     | To new line of streets.     |
| 7    | " Houle  | 7    | .....    | Moved hydrant                        |                             |
| 8    | Opp. 53 Park Av.                                 | 8    | 20"      | Reported before                      |                             |
| 8    | Plessis and Lagauchetière                        | 8    | .....    | Put in new valve                     | Old valve worn out.         |
| 8    | Notre Dame at Dow's brewery                      | 8    | 4"       | Repacked "                           | Old valve packing worn out. |
| 10   | Dorchester at St. Denis                          | 10   | 10"      | Recalcul'd joint                     | Joint blown out.            |
| "    | Otarlo at Subway                                 | "    | 24"      | Discont'd 24 in main                 | For subway.                 |

No. 8 *Cont'd*—Schedule showing the Repairs done to Main Pipes, Hydrants and Valves during year 1892.

| POSITION.  | DATE.   | Diameter. | Valves |          | HOW REPAIRED.                    | Probable cause of injury.      |
|--|---------|-----------|--------|----------|----------------------------------|--------------------------------|
|  |         |           | Valves | Hydrants |                                  |                                |
| Ontario and Papineau Av.....   | Oct. 10 | .....     | 1      | 1        | Raised valve cover.....          | Street grade raised.           |
| Corner King and Common.....  | " 11    | 4" Main.. | .....  | .....    | Recaulked joint.....             | Joint blown out.               |
| Mount Royal Av. and Park Av..  | " "     | .....     | .....  | 1        | Put in new valve.....            | Old valve worn out.            |
| Logan corner St. Germain.....  | " "     | 6" Main.. | .....  | .....    | Put in new piece 6 in. pipe..... | Pipe brok. put'g stone on top. |
| Ontario at Subway.....   | " "     | 24" "     | .....  | .....    | Disconnected 24 in. main.....    | For subway.                    |
| Fulford and St. James.....   | " "     | .....     | .....  | 1        | Put in new valve.....            | Old valve worn out.            |
| University and Pine Av.....  | " "     | .....     | 1      | .....    | Raised valve stone.....          | To grade of street.            |
| Colborne and Wellington .....  | " 12    | .....     | .....  | 1        | Put in new valve.....            | Old one worn out.              |
| Maisonneuve at Ontario.....  | " "     | .....     | .....  | 1        | " "                              | " "                            |
| Ontario at Subway.....   | " "     | 24" Main  | .....  | .....    | Discont. 24 in. main.....        | For subway.                    |
| " and Maisonneuve.....   | " "     | .....     | 1      | .....    | Raising valve stone.....         | To grade of street.            |
| " " Champlain.....   | " "     | .....     | 1      | .....    | " "                              | " "                            |
| Cadieux and Pine Av.....   | " 13    | .....     | .....  | 1        | Put in new valve.....            | Old valve worn out.            |
| School House lane.....   | " "     | 4" .....  | .....  | .....    | " "                              | " "                            |
| 99 Delisle street .....  | " "     | 4" Main.. | .....  | .....    | Recaulk'd joint.....             | Joint blown out.               |
| Atwater and St. Patrick.....   | " 14    | 30" ..... | 1      | .....    | Repaired gearing.....            | Ge. ring broken.               |
| Corner N.-Dame and Marleboro...<br>Notre-Dame from Chaboillez Sqr.<br>to Mountain..... | " "     | .....     | .....  | 1        | Put in new valve .....           | Old valve worn out.            |
| Jurors and Radegonde.....  | " "     | .....     | 1      | .....    | Examining valves.....            | To grade of street.            |
| Corner Atwater Av. & St. Patrick   | " 15    | 30" ..... | 1      | .....    | Raising valve stone.....         |                                |
| Cadieux betw'n Roy & Napoleon.   | " "     | .....     | .....  | 1        | Pump'g water out of well.....    |                                |
| Jurors corner Bleury.....  | " "     | .....     | .....  | 1        | Put in new washer.....           | Washer split.                  |
| St. Felix and Notre-Dame.....  | " "     | .....     | .....  | 1        | Took away old hydrant.....       | For street widening.           |
| Plessis and Ontario.....   | " "     | .....     | 1      | .....    | Rebuilding valve chamber.....    | Old chamber falling in.        |
| Corner Beaudry and Robin .....   | " "     | .....     | 1      | .....    | Placing valve stone .....        | To street level.               |
|  |         | .....     | 1      | .....    | Put in new valve .....           | Hydrant valve worn out.        |

| Location                       | Valve Size | Material  | Condition | Remarks                        |
|--------------------------------|------------|-----------|-----------|--------------------------------|
| Dorchester and St. Alphonse    | 19"        | Cast Iron | Good      | To line and level of street.   |
| " " Champlain                  | "          | "         | "         | "                              |
| " " St. Dominique              | "          | "         | "         | "                              |
| Barclay and Notre-Dame         | 19"        | Cast Iron | Good      | Packing worn out.              |
| St. Elizabeth and Craig        | "          | "         | "         | Hydrant valve worn out.        |
| Notre-Dame and Shaw            | "          | "         | "         | To line and level of street.   |
| St. Hubert " Mignonne          | "          | "         | "         | "                              |
| St. Ignace " Lagauchetiere     | 4"         | "         | "         | "                              |
| St. Alphonse " Dorchester      | "          | "         | "         | Packing worn out.              |
| Maisonneuve and Dorchester     | "          | "         | "         | "                              |
| Mt. St. Mary Av. & St. Antoine | "          | "         | "         | Hydrant valve worn out.        |
| St. James and St. Peter        | "          | "         | "         | To line and level of street.   |
| Notre-Dame and Guy             | "          | "         | "         | "                              |
| Kent and Delorimier            | 20"        | "         | "         | Old one cracked.               |
| Ontario and Visitation         | "          | "         | "         | To line and level of street.   |
| Common and McGill              | "          | "         | "         | "                              |
| " " St. Frs-Xavier             | "          | "         | "         | "                              |
| Amherst and St. Catherine      | "          | "         | "         | "                              |
| Bleury and Lagauchetiere       | 21"        | "         | "         | Packing worn out.              |
| St. Lawrence and Fortier       | 6"         | "         | "         | "                              |
| St. Lawrence                   | "          | "         | "         | "                              |
| St. James and Cathedral        | "          | "         | "         | Broken by men lying St. r'y r. |
| Commissioners and McGill       | "          | "         | "         | Falling in.                    |
| Ontario and Wolfe              | "          | "         | "         | To level of street.            |
| Fortune " Wellington           | 22"        | "         | "         | Hydrant valve worn out.        |
| Amherst and St. Catherine      | "          | "         | "         | To level of street.            |
| Ontario " Wolfe                | "          | "         | "         | "                              |

No. 5 *Contin'd*---Schedule showing the Repairs done to Main Pipes, Hydrants and Valves during year 1892.

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|                                   |      |    |                |       |   |                                    |                                |
|-----------------------------------|------|----|----------------|-------|---|------------------------------------|--------------------------------|
| Maisonneuve and Ontario .....     | Nov. | 4  | .....          | ..... | 1 | Put in new valve.....              | Valve worn out.                |
| Noire Dame and Papineau Av....    | "    | 5  | 6" Main.....   | ..... | 1 | " " piece pipe.....                | Pipe brok. by drain cutsink'g  |
| Chatham corner Noire Dame.....    | "    | 5  | .....          | ..... | 1 | Raised valve cover.....            | Street grade raised.           |
| Opp. 73 Commissioners.....        | "    | 7  | 6" Main.....   | ..... | 1 | Recaulked joint .....              | Joint blown out.               |
| Marlboro and St. Catherine.....   | "    | 7  | .....          | ..... | 1 | Put in new valve.....              | Valve brok. not properly laid  |
| Dezery and Ontario.....           | "    | 7  | .....          | ..... | 1 | Raising valve stone .....          | Streets grade raised.          |
| " St. Catherine.. ..              | "    | 7  | .....          | ..... | 1 | " " .....                          | " "                            |
| Wellington and Parm.....          | "    | 7  | .....          | ..... | 1 | Put in new valve.....              | Valve worn out.                |
| Colborne between Wellington }     | "    | 8  | 6" Main.....   | ..... | 1 | Recaulked joint.....               | Joint blown out pipe not       |
| and Common .....                  | "    | 8  | .....          | ..... | 1 | Put in new piece pipe 6 inch.....  | home in socket.                |
| Seigneurs at Bridge ..            | "    | 8  | .....          | ..... | 1 | " " valve .....                    | Valve worn out.                |
| St. Patrick and Charlevoix.....   | "    | 8  | .....          | ..... | 1 | " " .....                          | " "                            |
| Delorimier " Kent....             | "    | 9  | .....          | ..... | 1 | " " .....                          | " "                            |
| Victor and Commissioners.....     | "    | 10 | .....          | ..... | 1 | Recaulked joint.....               | Hydrant joint blown out.       |
| Lagauchetiere and Cathedral,      | "    | 11 | 1 1/2" .....   | ..... | 1 | Repaired valve.....                | Joint blown out.               |
| Comr's at Custom House Sqr.....   | "    | "  | 6" Main.....   | ..... | 1 | Recaulked joints .....             | " "                            |
| 291 Commissioners .....           | "    | "  | 4" " .....     | ..... | 1 | " .....                            | Defective pipe brok'n.         |
| 32 Versailles .....               | "    | "  | 4" " .....     | ..... | 1 | Put in new piece.....              | Valve worn out.                |
| 577 Wellington .....              | "    | 13 | .....          | ..... | 1 | " " valve.....                     | " "                            |
| Island and Centre .....           | "    | 14 | .....          | ..... | 1 | " " .....                          | Joint blown out.               |
| Sebastopol Street .....           | "    | "  | 10" Main ..... | ..... | 1 | Recaulked joint.....               | " "                            |
| Richmond at Railway track .....   | "    | "  | 6" " .....     | ..... | 1 | " .....                            | At Railway track.              |
| Aqueduct street.....              | "    | "  | .....          | ..... | 1 | Low red valve chamber.....         | Pipe burst.                    |
| Mountain at Railway track.....    | "    | "  | 12" Main.....  | ..... | 1 | Put in new pi ce .....             | Hydr't seat washer worn out    |
| Common and King .....             | "    | "  | .....          | ..... | 1 | " " washer .....                   | Spindle strained.              |
| Amherst and Mignonne.....         | "    | 15 | 4" .....       | ..... | 1 | " " spindle.....                   | Pipe to hydr't brok. by sett'g |
| Barclay " Notre-Dame.....         | "    | "  | .....          | ..... | 1 | " " piece pipe.....                | Already reported.              |
| Commissioners and Victor.....     | "    | 17 | 30" .....      | ..... | 1 | Putting yoke in 30 in. valve ..... | Nut loose on bottom of rod.    |
| St. Patrick and Atwater Av.....   | "    | "  | .....          | ..... | 1 | New valve put in .....             | To line of Street.             |
| Manufacturers and Sharer.....     | "    | "  | .....          | ..... | 1 | Grading valve stone.....           | " "                            |
| Notre-Dame and McGill.....        | "    | "  | .....          | ..... | 1 | " " .....                          | Joint blown leak.              |
| Sanguinet and Vitre.....          | "    | "  | .....          | ..... | 1 | " " .....                          | Spindle broken.                |
| St. Frs -Xavier and St. Paul..... | "    | 19 | 10" Main ..... | ..... | 1 | Put in new piece pipe.....         | Packing worn out.              |
| Wheel House.....                  | "    | "  | .....          | ..... | 1 | Put in new 30 in. spindle .....    |                                |
| Commissioners and C. H. Sqr.....  | "    | "  | 30" .....      | ..... | 1 | Repacked valve.....                |                                |

No. 8 *Cont'd*—Schedule showing the Repairs done to Main Pipes, Hydrants and Valves during year 1892.

| POSITION.                         | DATE.   | Diameter | Valves | Hydrants | HOW REPAIRED.                       | Probable cause of injury.        |
|-----------------------------------|---------|----------|--------|----------|-------------------------------------|----------------------------------|
| Mansfield and St. Catherine.....  | Nov. 21 | 4"       | 1      | 1        | Put in new 4 inch valve.....        | Old valve no good.               |
| 20 Shannon street.....            | " 22    | 4"       | 1      | 1        | Recaulked 4 inch joint.....         | Joint blown out.                 |
| School House lane.....            | " 23    | "        | 1      | 1        | Recaulked " main.....               | "                                |
| Dorchester and Phillip.....       | " "     | 10"      | 1      | 1        | Recaulked 10 inch ".....            | "                                |
| Cypress and Peel.....             | " "     | "        | 1      | 1        | Put in a new valve... ..            | Hydrant valve useless.           |
| Opp. 425 St. James street.....    | " "     | 12"      | 1      | 1        | Recaulked joint.....                | 1 1/2 inch joint blown out.      |
| McCord street.....                | " 24    | 4"       | 1      | 1        | Located box.....                    | Under footpath.                  |
| Pine Avenue and St. Urbain.....   | " 25    | 4"       | 1      | 1        | Put in 4 inch spindle.....          | Spindle broken.                  |
| St. Catherine opp. Towers.....    | " "     | 4"       | 1      | 1        | Put in new piece.....               | 4 in. pipe broke across dr'n cut |
| Mignonne and Shaw.....            | " "     | 10"      | 1      | 1        | Recaulked joint.....                | 10 inch joint blown out.         |
| Aqueduct " Dorchester.....        | " "     | 4"       | 1      | 1        | " ".....                            | "                                |
| Forfar corner of St. Etienne..... | " "     | 6"       | 1      | 1        | Repacked valve.....                 | Packing worn out.                |
| Harbour at Gas Co's Yard.....     | " 21    | "        | 1      | 1        | Put in new valve.....               | Hydrant valve worn out.          |
| St. Etienne.....                  | " "     | 10"      | 1      | 1        | Repaired.....                       | Pipe split.                      |
| Parthenais and Mignonne.....      | " 28    | "        | 1      | 1        | Put in new valve.....               | Hydrant valve worn out.          |
| Pine Av. N. of Oxenden.....       | " "     | 12"      | 1      | 1        | " ".....                            | On a/c of sinking of main.       |
| Fulford and Delisle... ..         | " 29    | "        | 1      | 1        | " ".....                            | Old hydrant valve worn out.      |
| St. James and St. Margaret.....   | " 30    | 4"       | 1      | 1        | Recaulked joint.....                | 4 in. joint blown out.           |
| Shearer and Manufacturers.....    | " "     | "        | 1      | 1        | Removed wood & repaired hydrant...  | 1 piece wood caus'g it to leak   |
| Dupré and St. Paul.....           | " "     | "        | 1      | 1        | Repacked.....                       | Packing worn out.                |
| N.-D. me at C. P. R. Station..... | Dec. 1  | "        | 1      | 1        | ".....                              | Old hydrant taken out.           |
| 90 Marsfield street.....          | " 1     | "        | 1      | 1        | Putting new 5 noz.....              | Covered with stones.             |
| Pine Avenue and University.....   | " 1     | "        | 1      | 1        | Uncovered valve.....                | 4 inch joint blown out.          |
| 61 Versaille street.....          | " 2     | 4"       | 1      | 1        | Recaulked joint.....                | "                                |
| Rachel and Mitchison.....         | " 2     | "        | 1      | 1        | Raised valve cover.....             | To new grade of s'root.          |
| Pine Avenue and St. Lawrence..    | " 3     | 20"      | 1      | 1        | Pumped water out of valve chamber.. | "                                |



| Dec. | No. | Locality                           | Part  | Material | Remarks                              |
|------|-----|------------------------------------|-------|----------|--------------------------------------|
| Dec. | 3   | St. Margaret and St. Antoin        | ..... | .....    | Pumped water out of hydr. chamber.   |
| "    | 3   | St. Catherine at stre t Ry stables | ..... | .....    | Sludged hydrant                      |
| "    | 3   | Aqueduct and St. James             | ..... | .....    | Recalked joint                       |
| "    | 5   | Montana and Rachel                 | ..... | .....    | Graded valve cover                   |
| "    | 5   | Amherst                            | ..... | .....    | "                                    |
| "    | 5   | Forfur and St. Etienne             | ..... | .....    | Rebuilt valve chamber                |
| "    | 6   | St. Catherine and Du Lois          | ..... | .....    | Raising hydrant                      |
| "    | 6   | Congregation near Leber            | ..... | .....    | Put in new valve                     |
| "    | 6   | Park Avenue and Sherbrooke         | ..... | .....    | "                                    |
| "    | 6   | St. Denis and Mount Royal          | ..... | .....    | Raised valve cover                   |
| "    | 6   | S. Catherine and Bleury            | ..... | .....    | Changing position of stone on valve  |
| "    | 7   | Park Av. ab. Sherbrooke            | ..... | .....    | New valve put in                     |
| "    | 7   | St. Denis and Mount Royal Av.      | ..... | .....    | Raised valve cover                   |
| "    | 7   | William and King                   | ..... | .....    | Repaired with lead plug and strapped |
| "    | 9   | Presbiterian below Ontario         | ..... | .....    | Put new washer on seat               |
| "    | 9   | Perthuis and St. Hubert            | ..... | .....    | Raising main                         |
| "    | 9   | St. Famille and Pine               | ..... | .....    | Raised valve cover                   |
| "    | 10  | Beaudry and St. Catherine          | ..... | .....    | Put in new valve                     |
| "    | "   | Ontario and Champlain              | ..... | .....    | "                                    |
| "    | 13  | Seignours near Basin               | ..... | .....    | Recalked 4 in joint                  |
| "    | 14  | Sanguinet and Mignonne             | ..... | .....    | Put in new valve                     |
| "    | 15  | Opposite 127 Charon                | ..... | .....    | Put in new piece                     |
| "    | 16  | St. Denis and Ontario              | ..... | .....    | Repaired                             |
| "    | 17  | Opposite 75 Congregation           | ..... | .....    | Took piece of wood out               |
| "    | "   | Dorchester and St. Lawrence        | ..... | .....    | Thawed 10 in valve                   |
| "    | "   | 246 Magdalen                       | ..... | .....    | Put in 5 nozzle hydrant              |
| "    | "   | 233 Manufacturers                  | ..... | .....    | Repaired                             |
| "    | 19  | Dorchester and St. Urbain          | ..... | .....    | Recalked 10 in joint                 |
| "    | 20  | Inspectors bwn N. D. & St. James   | ..... | .....    | Put in new valve                     |
| "    | 21  | Congregation and Favard            | ..... | .....    | "                                    |
| "    | "   | Cadieux and Roy                    | ..... | .....    | "                                    |

No. 8 Cont'd.—Schedule showing the repairs done to Main Pipes, Hydrants and Valves during year 1892.

| POSITION          | DATE | HOW REPAIRED.                             | Probable cause of injury                          |
|-------------------|------|---|---|
| 1st St. & 2nd St. | 12/1 | Repaired rod                              | Hydr. rod broken by frost                         |
| 2nd St. & 3rd St. | 12/1 | Repaired joint                            | " " " " " " " "                                   |
| 3rd St. & 4th St. | 12/1 | Hydrant rod removed                       | Hydrant rod broken by frost.                      |
| 4th St. & 5th St. | 12/1 | Put in new valve                          | Hydrant valve worn out.                           |
| 5th St. & 6th St. | 12/1 | " " " "                                   | " " " " " "                                       |
| 6th St. & 7th St. | 12/1 | Repaired by frost                         | Hydrant broken by frost                           |
| 7th St. & 8th St. | 12/1 | Replaced by perfect one 2 noles           | " " " " " "                                       |
| 8th St. & 9th St. | 12/1 | Replaced v'va cover & lengthened int. rod | Hydr. frozen in column, split to level of street. |

JOHN FALLON,

Foreman at shop.

TABLE No. 9—SHOWING THE DIFFERENT KINDS AND SIZES  
METERS BELONGING TO THE CITY AND TO PRIVATE  
PARTIES FOR THE YEAR 1892.

|       | Sizes in inches. | Property of the City. |               |               |        | Private property. |               |               |        |              |
|-------|------------------|-----------------------|---------------|---------------|--------|-------------------|---------------|---------------|--------|--------------|
|       |                  | In the City.          | Outside City. | At work shop. | Total. | In the City.      | Outside City. | At work shop. | Total. | Grand total. |
| ..... | 10               |                       |               | 2             | 2      |                   |               |               |        | 2            |
| ..... | 6                | 4                     | 1             | 1             | 6      | 4                 |               |               | 4      | 10           |
| ..... | 4                | 14                    |               | 9             | 23     | 5                 |               |               | 5      | 28           |
| ..... | 3                | 66                    |               | 7             | 73     | 9                 |               |               | 9      | 82           |
| ..... | 2                | 34                    |               |               | 32     | 5                 |               |               | 5      | 37           |
| ..... | 1 1/2            | 8                     |               | 2             | 10     | 2                 |               |               | 2      | 12           |
| ..... | 2                |                       |               |               |        | 1                 |               |               | 1      | 1            |
| ..... | 1                | 7                     |               | 9             | 16     |                   |               |               |        | 16           |
| ..... | 3/8              | 21                    |               | 9             | 30     | 2                 |               |               | 2      | 32           |
| ..... | 1 1/2            | 2                     |               |               | 2      |                   |               |               |        | 2            |
| ..... | 5                | 2                     |               |               | 2      | 2                 | 2             |               | 4      | 6            |
| ..... | 4                | 20                    | 1             |               | 21     | 5                 |               |               | 5      | 26           |
| ..... | 3                | 23                    | 1             |               | 24     | 3                 |               |               | 3      | 27           |
| ..... | 2                | 22                    | 3             |               | 25     | 4                 |               |               | 4      | 29           |
| ..... | 1 1/2            | 20                    |               | 2             | 22     | 2                 |               |               | 2      | 24           |
| ..... | 1                | 50                    |               |               | 50     |                   |               |               |        | 50           |
| ..... | 2 1/2            | 35                    |               | 13            | 48     |                   |               |               | 2      | 50           |
| ..... | 3 1/2            | 118                   |               | 10            | 128    | 2                 |               |               | 2      | 130          |
| ..... | 2                | 10                    |               |               | 10     |                   |               |               |        | 10           |
| ..... | 1                | 33                    |               | 3             | 36     | 1                 |               |               | 1      | 37           |
| ..... | 3/4              | 6                     |               |               | 6      |                   |               |               |        | 6            |
| ..... | 1 1/4            | 75                    |               | 9             | 84     |                   |               |               |        | 84           |
| ..... | 3/8              |                       |               |               |        | 1                 |               |               | 1      | 1            |
| ..... | 3                | 1                     |               | 1             | 2      |                   |               |               |        | 2            |
| ..... | 2                | 9                     |               | 1             | 10     | 5                 |               |               | 5      | 15           |
| ..... | 1 1/2            | 12                    |               | 1             | 13     | 1                 |               |               | 1      | 14           |
| ..... | 1                | 34                    | 1             | 13            | 44     |                   |               |               |        | 48           |
| ..... | 3/4              | 50                    |               | 12            | 62     | 3                 |               |               | 3      | 65           |
| ..... | 1                | 1                     |               | 2             | 3      |                   |               |               |        | 3            |
| ..... | 3/8              | 5                     |               | 5             | 10     |                   |               |               |        | 10           |
|       |                  | 678                   | 7             | 113           | 798    | 59                | 2             |               | 61     | 859          |









SCHEDULE No. 10.—SHOWING THE PIPES, &c.—Continued.

| NAME OF STREET.       | Length in feet of Cast Iron Pipes. |     |     |      |      |     |    |    |       |     | No. of Valves. |     |     |     |     |    |    |    |       |    | Wrought Iron Pipes. | Hydrants. | Length of Lead Pipes in feet. | Houses Ruptured. | Brass cocks. | Air cocks. |     |    |     |     |
|-----------------------|------------------------------------|-----|-----|------|------|-----|----|----|-------|-----|----------------|-----|-----|-----|-----|----|----|----|-------|----|---------------------|-----------|-------------------------------|------------------|--------------|------------|-----|----|-----|-----|
|                       | Length in feet of Cast Iron Pipes. |     |     |      |      |     |    |    |       |     | No. of Valves. |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              |            |     |    |     |     |
|                       | 24"                                | 20" | 16" | 12"  | 10"  | 8"  | 6" | 4" | Total | 30" | 24"            | 20" | 16" | 12" | 10" | 8" | 6" | 4" | Total |    |                     |           |                               |                  |              |            |     |    |     |     |
| St. Lawrence W.—Cont. |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              |            |     |    |     |     |
| Brought forward       | 1714                               |     |     | 705  | 1755 | 125 | 19 | 40 | 4358  |     |                | 2   |     | 3   | 1   | 3  | 1  | 8  | 10    |    |                     |           | 14                            |                  |              | 6780       | 274 | 64 | 210 |     |
| Ontario               |                                    |     |     |      |      |     |    | 7  | 7     |     |                |     |     |     |     |    |    | 1  | 1     |    |                     |           |                               |                  |              | 800        | 18  | 10 | 6   |     |
| Pine Av               | 1295                               |     |     | 544  | 28   | 617 | 21 | 4  | 3512  |     |                | 1   |     | 2   | 2   | 7  | 1  | 2  | 16    |    |                     |           | 3                             |                  |              | 192        | 2   | 8  | 8   |     |
| St Famille            |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 60         | 2   | 1  | 1   |     |
| Plateau               |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 12         | 1   | 1  | 1   |     |
| Sherbrooke            |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 106        | 8   | 1  | 7   |     |
| Mignonne              |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 31         | 2   |    | 2   |     |
| Church                |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 424        | 20  | 6  | 34  |     |
| Hutchison             |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 273        | 13  | 1  | 12  |     |
| St Alexander          |                                    |     |     |      |      |     |    | 8  | 8     |     |                |     |     |     |     |    |    | 1  | 1     |    |                     |           |                               |                  |              |            |     |    |     | 12  |
| St Cuthbert           |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 217        | 10  | 6  | 12  |     |
| Moulton Av            |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 81         | 3   | 3  | 3   |     |
| Prince Arthur         |                                    |     |     | 1372 |      |     | 12 | 6  | 1390  |     |                |     |     |     |     |    |    | 1  | 1     |    |                     |           | 3                             |                  |              | 28         | 9   | 1  | 8   | 8   |
| Whites Lane           |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 12         | 1   | 1  | 1   |     |
| Mayor                 |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 145        | 7   |    | 7   |     |
| Total                 | 3012                               |     |     | 2623 | 1783 | 754 | 41 | 80 | 8970  |     |                | 2   |     | 5   | 3   | 10 |    | 2  | 11    | 24 |                     |           | 12                            |                  |              | 7561       | 303 | 91 | 304 | 304 |
| St. Louis W rd        |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              |            |     |    |     |     |
| Gorman                |                                    |     |     |      |      | 231 |    |    | 231   |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 85         | 4   | 1  | 3   | 3   |
| Sanguinet             |                                    |     |     |      |      |     |    | 4  | 4     |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 286        | 41  | 18 | 28  | 28  |
| St Dominique          |                                    |     |     |      |      | 2   |    | 2  | 4     |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 280        | 17  | 3  | 13  | 13  |
| St Denis              |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 497        | 13  | 1  | 13  | 13  |
| Albina                |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 20         | 2   |    | 2   | 2   |
| Laval Av              |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 1491       | 82  | 40 | 12  | 12  |
| St Lawrence           |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 203        | 18  | 18 | 5   | 5   |
| Roy                   |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 308        | 10  | 4  | 6   | 6   |
| Cadieux               |                                    |     |     | 1771 | 1748 | 105 | 28 | 27 | 5688  |     |                |     |     |     |     |    |    | 2  | 2     | 10 |                     |           |                               |                  |              | 182        | 12  | 3  | 9   | 9   |
| Crain                 |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 82         | 3   | 2  |     |     |
| Charbonneau           |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 178        | 1   | 1  | 1   | 1   |
| Dubord                |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 82         | 1   | 1  | 1   | 1   |
| Ontario               |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 82         | 1   | 1  | 1   | 1   |
| V. 1874               |                                    |     |     |      |      |     |    |    |       |     |                |     |     |     |     |    |    |    |       |    |                     |           |                               |                  |              | 87         | 2   |    |     | 2   |







| Total .....               | 27         | 3486        | 451         | 247        | 148       | 4576        | 1        | 3        | 4         | 14        | 11        | 6182        | 543        | 81        | 202        |
|---------------------------|------------|-------------|-------------|------------|-----------|-------------|----------|----------|-----------|-----------|-----------|-------------|------------|-----------|------------|
| <b>St. J. Bte Ward.</b>   |            |             |             |            |           |             |          |          |           |           |           |             |            |           |            |
| Cadioux .....             | 202        | 997         | 24          | ..         | ..        | 1226        | 3        | ..       | ..        | ..        | 1         | 76          | 6          | ..        | 5          |
| Drolet .....              | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 686         | 49         | ..        | 47         |
| Laval Av .....            | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 76          | ..         | ..        | 2          |
| St. Denis .....           | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 237         | 24         | 4         | 10         |
| St. Lawrence .....        | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 166         | 10         | 2         | 8          |
| St. Urbain .....          | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 192         | 16         | ..        | 16         |
| Sanguinet .....           | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 54          | 8          | ..        | 3          |
| Maple .....               | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 374         | 20         | ..        | 20         |
| Marie Anne .....          | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 73          | 0          | 5         | 3          |
| Berri .....               | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 284         | 18         | 4         | 14         |
| Mt Royal Av. ....         | ..         | ..          | 44          | ..         | ..        | 1238        | 2        | ..       | ..        | 5         | 2         | 222         | 12         | 11        | 1          |
| St. Dominique .....       | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 64          | 6          | ..        | 6          |
| Daluth Av. ....           | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 69          | 0          | ..        | 6          |
| Dufferin .....            | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 171         | 8          | ..        | 8          |
| Piccola .....             | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 64          | 5          | 8         | ..         |
| Clarke .....              | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 62          | 2          | ..        | 2          |
| Montana .....             | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 80          | 1          | 1         | ..         |
| Pantaléon .....           | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 882         | 26         | 7         | 18         |
| Amherst .....             | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 160         | 10         | ..        | 10         |
| Mitchison .....           | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 289         | 28         | ..        | 28         |
| Sydenham .....            | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 45          | 2          | ..        | 2          |
| Ile Breboeuf .....        | ..         | ..          | 15          | 8          | ..        | 697         | 2        | ..       | ..        | 2         | ..        | 176         | 10         | ..        | 10         |
| Rachel .....              | ..         | 677         | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | 1         | 554         | 53         | 6         | 27         |
| <b>Total .....</b>        | <b>202</b> | <b>3042</b> | <b>80</b>   | <b>8</b>   | <b>8</b>  | <b>5346</b> | <b>7</b> | <b>3</b> | <b>..</b> | <b>8</b>  | <b>4</b>  | <b>4647</b> | <b>284</b> | <b>43</b> | <b>241</b> |
| <b>Hochelaga W'd.</b>     |            |             |             |            |           |             |          |          |           |           |           |             |            |           |            |
| St. Catherine .....       | ..         | 4796        | 256         | 2          | 32        | 5084        | 8        | ..       | 3         | 12        | 12        | ..          | ..         | ..        | ..         |
| Moran .....               | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 132         | 7          | 1         | ..         |
| Marlborough .....         | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 152         | 8          | 2         | ..         |
| Logan .....               | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 186         | 12         | ..        | 12         |
| Mignonne .....            | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 110         | 6          | ..        | 6          |
| Préfontaine .....         | ..         | 1224        | 50          | 21         | 21        | 1317        | 3        | 1        | 2         | 6         | 4         | ..          | ..         | ..        | ..         |
| Frontenac .....           | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 482         | 31         | 6         | 13         |
| Dodry .....               | ..         | ..          | ..          | ..         | ..        | ..          | ..       | ..       | ..        | ..        | ..        | 185         | 9          | 3         | 8          |
| <b>Carried over .....</b> | <b>..</b>  | <b>4796</b> | <b>1224</b> | <b>806</b> | <b>23</b> | <b>6403</b> | <b>8</b> | <b>3</b> | <b>5</b>  | <b>16</b> | <b>16</b> | <b>1247</b> | <b>65</b>  | <b>19</b> | <b>46</b>  |



No. 10 Cont'd—Schedule showing the Pipes, Hydrants, Valves, Services, &c., laid in the City of Montreal during the year 1892

| WARDE.           | LENGTH IN FEET OF CAST IRON PIPES. |      |      |       |       |       |      |       | NO. OF VALVES. |     |     |     |     |     |     |     | TOTAL. | Wrought<br>Iron<br>Pipe. | Hydrants. | Length of<br>Lead<br>Pipes in<br>feet. | Houses<br>Supplied. | Brass Cocks. | Air Cocks. |     |      |
|------------------|------------------------------------|------|------|-------|-------|-------|------|-------|----------------|-----|-----|-----|-----|-----|-----|-----|--------|--------------------------|-----------|--|---------------------|--------------|------------|-----|------|
|                  | TOTAL.                             |      |      |       |       |       |      |       | TOTAL.         |     |     |     |     |     |     |     |        |                          |           |  |                     |              |            |     |      |
|                  | 24"                                | 20"  | 18"  | 15"   | 12"   | 10"   | 8"   | 6"    | 4"             | 30" | 24" | 20" | 16" | 12" | 10" | 8"  |        |                          |           |  |                     |              |            | 6"  | 4"   |
| East .....       | 1650                               | ...  | ...  | 4     | ...   | 5     | 3    | 33    | 1604           | ... | 1   | ... | ... | 1   | ... | 3   | 1      | 4                        | 13        | ...                                    | 2                   | 174          | 10         | 3   | 8    |
| Centre .....     | 675                                | ...  | 3    | 362   | 75    | ...   | ...  | 6"    | 1287           | ... | ... | ... | ... | ... | 2   | ... | ...    | 4                        | 5         | ...                                    | 4                   | 81           | 6          | 2   | 1    |
| West .....       | ...                                | ...  | ...  | ...   | ...   | ...   | ...  | 27    | 27             | ... | ... | ... | ... | ... | ... | ... | ...    | 1                        | 1         | 25                                     | ...                 | 22           | 2          | 1   | 1    |
| St Ann .....     | ...                                | ...  | 7098 | 2692  | 3392  | 190   | 213  | 13891 | ...            | ... | ... | ... | ... | 13  | 12  | 14  | 2      | 12                       | 43        | ...                                    | 35                  | 1564         | 84         | 15  | 69   |
| St. Antoine. ... | 47                                 | ...  | 3005 | 2875  | 1543  | 118   | 387  | 7925  | ...            | 1   | ... | ... | ... | 6   | 6   | 5   | 1      | 14                       | 40        | ...                                    | 19                  | 5450         | 249        | 51  | 181  |
| St. Lawr. ....   | 5012                               | ...  | 2621 | 1723  | 754   | 60    | 50   | 8379  | ...            | ... | ... | ... | ... | 6   | 3   | 10  | 2      | 11                       | 84        | ...                                    | 18                  | 7813         | 393        | 91  | 332  |
| St. Louis. ....  | 1616                               | 1848 | 2598 | 303   | 1620  | 41    | 101  | 6027  | ...            | ... | 1   | 2   | 6   | 6   | 6   | 3   | 3      | 6                        | 33        | ...                                    | 13                  | 4194         | 305        | 59  | 110  |
| St. James. ....  | ...                                | ...  | 542  | 896   | 897   | 483   | 103  | 11043 | ...            | ... | ... | ... | ... | 4   | 1   | 16  | 1      | 6                        | 26        | ...                                    | 26                  | 5630         | 412        | 100 | 313  |
| St. Mary. ....   | ...                                | ...  | 270  | 2459  | 450   | 247   | 123  | 4573  | ...            | ... | ... | ... | ... | 1   | 3   | 1   | 3      | 6                        | 14        | ...                                    | 11                  | 6132         | 343        | 79  | 203  |
| St J. Ete .....  | ...                                | ...  | 202  | 2052  | ...   | 88    | 5    | 3358  | ...            | ... | ... | ... | ... | 7   | ... | 1   | ...    | ...                      | 6         | ...                                    | 4                   | 4547         | 284        | 43  | 241  |
| Hochelega. ...   | 171                                | ...  | 6219 | 1224  | 2506  | 52    | 56   | 10330 | ...            | ... | ... | ... | ... | 13  | 3   | 4   | 2      | 3                        | 27        | ...                                    | 22                  | 1847         | 107        | 23  | 85   |
| ■ Gabriel .....  | ...                                | ...  | ...  | ...   | ...   | 593   | ...  | 6     | 766            | ... | ... | ... | ... | ... | ... | 1   | ...    | ...                      | 1         | ...                                    | 1                   | 5334         | 237        | 34  | 223  |
|                  | 3496                               | 4575 | 3050 | 25401 | 12994 | 20125 | 1153 | 1153  | 70877          | 1   | 2   | 4   | 2   | 60  | 25  | 63  | 15     | 70                       | 265       | 29                                     | 157                 | 45788        | 2353       | 538 | 1801 |



**SCHEDULE.—PIPES, ETC., ABANDONNED DURING THE  
YEAR 1892.**

| NAME OF STREETS. | CAST IRON PIPES<br>IN FEET. |              |              | VALVES   |           |           | Hydrants. |
|------------------|-----------------------------|--------------|--------------|----------|-----------|-----------|-----------|
|                  | 6"                          | 4"           | Total.       | 8"       | 6"        | 4"        |           |
| Albion           |                             | 462          | 462          |          | 2         |           | 1         |
| Albion           |                             | 915          | 915          |          |           | 1         | 1         |
| Albion           | 1592                        |              | 1592         |          | 1         |           | 3         |
| Albion           |                             | 1030         | 1030         |          |           | 1         |           |
| Albion           |                             | 810          | 810          |          | 1         |           |           |
| Albion           | 1164                        | 850          | 2014         |          | 2         | 1         | 1         |
| Albion           |                             | 1480         | 1480         |          |           | 1         | 2         |
| Albion           |                             | 159          | 159          |          |           | 1         |           |
| Albion           |                             | 28           | 28           |          |           | 1         |           |
| Albion           | 600                         | 663          | 1263         |          |           |           | 1         |
| Albion           | 1062                        |              | 1062         |          | 3         |           | 1         |
| Albion           |                             | 987          | 987          |          |           |           |           |
| Albion           |                             | 590          | 590          |          |           | 1         | 2         |
| Albion           |                             | 582          | 582          |          |           | 1         | 1         |
| Albion           |                             | 450          | 450          |          |           |           |           |
| Albion           |                             | 560          | 560          |          |           |           | 1         |
| Albion           |                             | 265          | 265          |          |           | 1         |           |
| Albion           |                             | 5125         | 5125         |          |           | 3         | 2         |
| Albion           |                             | 1344         | 1344         |          |           |           |           |
| Albion           |                             | 1580         | 1580         |          |           | 3         | 2         |
| Albion           | 65                          |              | 65           |          |           |           |           |
| Albion           |                             | 324          | 324          |          |           | 1         | 1         |
| Albion           |                             | 720          | 720          |          |           | 1         |           |
| Albion           | 120                         |              | 120          |          | 2         |           |           |
| Albion           |                             | 1747         | 1747         |          |           |           | 3         |
| Albion           |                             |              |              |          |           | 2         |           |
| Albion           |                             | 24           | 24           |          |           | 1         |           |
| Albion           |                             | 20           | 20           |          |           | 1         |           |
| Albion           |                             | 88           | 88           |          |           | 1         |           |
| Albion           |                             | 1207         | 1207         |          |           | 1         | 3         |
| Albion           |                             |              |              |          | 1         |           | 1         |
| Albion           | 35                          |              | 35           |          |           | 1         |           |
| Albion           |                             | 3408         | 3804         |          |           |           |           |
| Albion           |                             |              |              | 1        |           |           |           |
| <b>Total</b>     | <b>4638</b>                 | <b>25418</b> | <b>30056</b> | <b>1</b> | <b>12</b> | <b>24</b> | <b>26</b> |





## No. 13.—SCHEDULE.

1. THE POSITION OF PUBLIC FOUNTAINS ERECTED IN CITY OF MONTREAL,  
UP TO JANUARY 1893.

| LOCATION.                                | Cast Iron Basins. | Stone and Cement<br>Basins. | Stone Fountains | Cast Iron<br>Fountains. | Wood<br>Fountains. | Cast Iron<br>Drinking Troughs. | Number of Jets. |
|--|-------------------|-----------------------------|-----------------|-------------------------|--------------------|--------------------------------|-----------------|
| er Hall Square.....                      | .....             | .....                       | .....           | 1                       | .....              | .....                          | 1               |
| Rive Park.....                           | 1                 | .....                       | .....           | 1                       | .....              | .....                          | 2               |
| ecours Market.....                       | .....             | .....                       | .....           | .....                   | .....              | .....                          | 2               |
| ouillez Square.....                      | .....             | .....                       | .....           | .....                   | .....              | 1                              | 1               |
| ier Square.....                          | .....             | .....                       | .....           | 2                       | .....              | 1                              | 6               |
| orne at Flour Shed.....                  | .....             | .....                       | .....           | 1                       | .....              | .....                          | 2               |
| House Square.....                        | 2                 | 1                           | 2               | .....                   | .....              | .....                          | 5               |
| at Victoria Square.....                  | .....             | .....                       | 1               | .....                   | .....              | .....                          | 2               |
| opposite Drill Hall.....                 | .....             | .....                       | .....           | 1                       | .....              | 1                              | 1               |
| m House Square.....                      | .....             | .....                       | .....           | 1                       | .....              | 1                              | 1               |
| ester at Dominion Square.....            | .....             | .....                       | .....           | 1                       | .....              | 1                              | 1               |
| rin Square.....                          | .....             | .....                       | .....           | 1                       | .....              | .....                          | 1               |
| rd near Notre-Dame St.....               | .....             | .....                       | .....           | 1                       | .....              | 1                              | 1               |
| ault & St. Lawrence St.....              | .....             | .....                       | .....           | 1                       | .....              | 1                              | 1               |
| es Cartier Square & St. Paul St.....     | 1                 | .....                       | .....           | 1                       | .....              | 1                              | 5               |
| ctors St. at Hay Market.....             | .....             | .....                       | .....           | .....                   | .....              | 1                              | 1               |
| vish St. opposite Reservoir.....         | .....             | .....                       | .....           | 1                       | .....              | .....                          | 1               |
| ll & Common St.....                      | .....             | .....                       | 1               | .....                   | .....              | 1                              | 2               |
| St. at Waste Weir.....                   | .....             | .....                       | .....           | .....                   | 1                  | 1                              | 2               |
| t Royal Avenue.....                      | .....             | .....                       | .....           | .....                   | .....              | 1                              | 1               |
| -Dame St. near Ruisseau Migeon.....      | .....             | .....                       | .....           | .....                   | .....              | 1                              | 1               |
| -Dame St. and Poupart.....               | .....             | .....                       | .....           | 1                       | .....              | 1                              | 1               |
| io St. opposite Reformatory Grounds..... | .....             | .....                       | .....           | .....                   | 1                  | 1                              | 2               |
| io near Papineau Av.....                 | .....             | .....                       | .....           | .....                   | .....              | 1                              | 2               |
| ra corner Dalhousie.....                 | .....             | .....                       | .....           | .....                   | .....              | 1                              | 2               |
| eau Av North of Sherbrooke.....          | .....             | .....                       | .....           | .....                   | .....              | 1                              | 2               |
| eau Square.....                          | .....             | 1                           | .....           | .....                   | 1                  | 1                              | 7               |
| Av. & Duluth Avenue.....                 | .....             | .....                       | .....           | .....                   | .....              | 1                              | 2               |
| ps Square.....                           | .....             | .....                       | .....           | 1                       | .....              | .....                          | 1               |
| ps Square & St. Catherine St.....        | .....             | .....                       | .....           | .....                   | .....              | 1                              | 1               |
| e & Common St.....                       | .....             | .....                       | .....           | 1                       | .....              | 1                              | 1               |
| l & Champlain St.....                    | .....             | .....                       | .....           | 1                       | .....              | 1                              | 1               |
| ond Square.....                          | .....             | .....                       | .....           | 1                       | .....              | 1                              | 1               |
| eurs & William St.....                   | .....             | .....                       | .....           | 1                       | .....              | 1                              | 1               |
| rooke near Drummond St.....              | .....             | 1                           | .....           | .....                   | .....              | 1                              | 2               |
| rooke corner Guy.....                    | .....             | 1                           | .....           | .....                   | .....              | 1                              | 2               |
| in's Market.....                         | .....             | .....                       | .....           | .....                   | 2                  | .....                          | 2               |
| itome Market.....                        | .....             | .....                       | .....           | 1                       | .....              | 1                              | 2               |
| atherine & Western Park.....             | .....             | .....                       | .....           | .....                   | .....              | 1                              | 2               |
| atherine & Delorimier.....               | .....             | .....                       | .....           | .....                   | 1                  | 1                              | 2               |
| ibriel Market.....                       | .....             | .....                       | .....           | .....                   | 1                  | 1                              | 2               |
| mis Square.....                          | 1                 | .....                       | .....           | 2                       | .....              | .....                          | 9               |

## No. 13.—SCHEDULE.—Continued.

| No. | LOCATION.                           | Cast Iron Basins | Stone and Cement | Stone Fountains | Cast Iron Fountains. | Wood Fountains | Cast Iron, Drinking Troughs | Number of Jets. |
|-----|-------------------------------------|------------------|------------------|-----------------|----------------------|----------------|-----------------------------|-----------------|
| 43  | St. Patrick & Richmond St.....      | .....            | .....            | .....           | .....                | .....          | .....                       | .....           |
| 44  | St. Patrick & Napoleon Road.....    | .....            | .....            | .....           | .....                | .....          | .....                       | .....           |
| 45  | St. Patrick & Wellington St.....    | .....            | .....            | .....           | .....                | .....          | .....                       | .....           |
| 46  | St. Thomas & Ottawa St.....         | .....            | .....            | .....           | .....                | .....          | .....                       | .....           |
| 47  | Victoria Sq. South of Craig St..... | .....            | .....            | .....           | .....                | .....          | .....                       | .....           |
| 48  | Victoria Sq. North of Craig St..... | 3                | .....            | .....           | .....                | .....          | .....                       | .....           |
| 49  | Viger Sq. Basin No. 1.....          | .....            | .....            | .....           | .....                | .....          | .....                       | .....           |
| 50  | Viger Sq. Basin No. 2.....          | 3                | .....            | .....           | .....                | .....          | .....                       | .....           |
| 51  | Viger Sq.....                       | .....            | .....            | .....           | .....                | .....          | .....                       | .....           |
| 52  | Wellington & Centre St.....         | 1                | .....            | .....           | .....                | .....          | .....                       | .....           |
| 53  | Wellington & Magdalen St.....       | .....            | .....            | .....           | .....                | .....          | .....                       | .....           |
| 54  | Western Park.....                   | 2                | .....            | .....           | .....                | .....          | .....                       | .....           |
| 55  | St. Patricks Square.....            | 2                | .....            | .....           | .....                | .....          | .....                       | .....           |
| 56  | Dalhousie Square.....               | 2                | .....            | .....           | .....                | .....          | .....                       | .....           |

| No.                                | LOCATION.  | Road Watering Nozles. | Cast Iron Fountains. | Wood Fountains | Cast Iron Cattle Drinking Troughs | Number of Jets. |
|------------------------------------|--|-----------------------|----------------------|----------------|-----------------------------------|-----------------|
| Distributed through Mountain Park. |  |                       |                      |                |                                   |                 |
| 1                                  | High Level Reservoir.....                          | .....                 | .....                | .....          | .....                             | .....           |
| 2                                  | Foot of Elevator.....                              | .....                 | .....                | .....          | .....                             | .....           |
| 3                                  | Alongside Molson's Fence.....                      | .....                 | .....                | .....          | .....                             | .....           |
| 4                                  | Above Golf Club House.....                         | .....                 | .....                | .....          | .....                             | .....           |
| 5                                  | Park Road, North of Elevator....                   | 3                     | 10                   | .....          | .....                             | .....           |
| 6                                  | Park Road, running West side of Hall's property... | .....                 | .....                | .....          | .....                             | .....           |
| 7                                  | Park Av. opposite Duluth Avenue.....               | 1                     | .....                | .....          | .....                             | .....           |

## No. 13—SCHEDULE.—Continued.

| LOCATION.                           | Head Watering<br>Nozzles. | Cast Iron<br>Fountains. | Wood Fountains. | Cattle<br>Water Troughs. | Urinals | Number of Jets. |
|-------------------------------------|---------------------------|-------------------------|-----------------|--------------------------|---------|-----------------|
| Distributed along the Wharves.      |                           |                         |                 |                          |         |                 |
| Wind-Mill Point. ....               |                           | 8                       | 1               | 1                        | 1       | 3               |
| Allan's Wharf.....                  |                           | 1                       |                 |                          | 1       | 2               |
| Allan's Sheds.....                  |                           |                         |                 | 1                        |         | 2               |
| Opposite Custom House.....          |                           |                         |                 |                          | 1       | 1               |
| King's Basin.....                   |                           | 1                       |                 |                          |         | 1               |
| Dominion Line.....                  |                           |                         |                 | 1                        | 1       | 3               |
| Foot of Jacques Cartier Square..    |                           | 1                       |                 |                          |         | 1               |
| Foot of St. Gabriel St.....         | 1                         |                         |                 |                          |         | 1               |
| St. Helen's Island Ferry.....       |                           |                         |                 |                          |         | 1               |
| Beaver Line.....                    |                           |                         | 1               | 1                        | 1       | 3               |
| Donaldson Line, foot of Grant St .. |                           |                         |                 |                          | 1       | 1               |
| Commissioners, East of Berri ..     | 1                         |                         |                 |                          |         | 1               |
| Longueuil Ferry.....                |                           |                         |                 |                          | 1       | 2               |
| Foot of Marlborough St.....         |                           |                         |                 |                          | 1       | 2               |
| Foot of Dezery St.....              |                           |                         |                 |                          | 1       | 2               |
| West of Gale St.....                |                           |                         |                 |                          | 1       | 2               |

TABLE 1. A. C. F.

No. 14 SCHEDULE.—*Continued.*

## DETAILED STATEMENT OF EXPENDITURE UP TO 31ST DECEMBER 1892.

## PIPE TRACK.

|   | Spent.    |
|---|-----------|
| Repairs to valves and valve chambers..... | \$ 271 93 |
| 30" pump'g main .....                     | 1508 46   |
|   | <hr/>     |
|   | 1780 39   |

## ENGINE HOUSE LOW LEVEL.

|                         |          |
|-------------------------|----------|
| Repairs to boilers..... | 237 02   |
| " machinery . ....      | 166 54   |
| Staff.....              | 3800 00  |
| Wages.....              | 5178 78  |
| Coal for steam.....     | 15352 05 |
| Rent for land. ....     | 50 00    |
| Telephone service.....  | 53 00    |
| Supplies.....           | 690 13   |
| Sundries.....           | 81 93    |
| Repairs to buildings..  | 18 18    |
|                         | <hr/>    |
|                         | 25627 63 |

## RESERVOIRS.

|  |         |
|--|---------|
| Guardian McTavish Reservoir ( $\frac{1}{2}$ of salary) ..... | 400 00  |
| Watchman H. L. ....  | 602 35  |
| Shoveling snow.....  | 39 21   |
| Valve house.....   | 6 15    |
| Small boat.....  | 25 00   |
| Arc light.....   | 178 04  |
| Telephone service.....                                       | 27 40   |
| Sundries .....   | 140 62  |
|  | <hr/>   |
|  | 1418 77 |

## ENGINE HOUSE HIGH LEVEL.

|                           |         |
|---------------------------|---------|
| Wages... ..               | 1883 02 |
| Fuel for engine .....     | 4954 58 |
| Supplies.....             | 269 09  |
| Repairs to buildings..... | 43 12   |
| " machinery and boilers.. | 243 10  |
| Light and telephone ..... | 99 19   |
|                           | <hr/>   |
|                           | 7492 10 |

## WORKSHOP LAGAUCHETIERE ST.

|                                       |          |
|---------------------------------------|----------|
| Wages.....                            | 10446 94 |
| Iron, spikes, &c.....                 | 323 77   |
| Rent of foreman's house.....          | 200 00   |
| Telephone service.....                | 99 90    |
| Fuel and light.....                   | 678 26   |
| Repairs to buildings.....             | 142 16   |
| " carpenter's shops and stables ..... | 15 79    |
|                                       | <hr/>    |
|                                       | 11906 82 |

No. 14 SCHEDULE — *Continued.*

## DETAILED STATEMENT OF EXPENDITURE UP TO 31ST DECEMBER 1892.

## DISTRIBUTION PIPES.

|  | Spent.         |
|--|----------------|
| Repairs to mains, services and valves : wages..... | \$31520 40     |
| Thawing pipes and carting water.....               | 535 34         |
| Inspecting service pipes inside of houses.....     | 7814 49        |
| Dress for inspectors.....                          | 471 45         |
| Repairs to footpaths and services : wages.....     | 7178 04        |
| Materials : Iron castings, lead, tin, &c. ....     | 1259 65        |
| “ Wood, planks, nails, &c.....                     | 714 23         |
| “ Brick, cement, sand, drain pipes, &c.....        | 13 75          |
| Alarm signals.....                                 |                |
|  | <hr/> 49507 55 |

## METER DEPARTMENT.

|  |               |
|--|---------------|
| 2 Meter inspectors and car fare.....       | 2484 99       |
| Testing, placing and repairing meters..... | 2818 90       |
| New meters.....                            | 2152 50       |
| Repairs to building.....                   | 5 00          |
|  | <hr/> 7462 29 |

## PUBLIC FOUNTAINS.

|                            |               |
|----------------------------|---------------|
| Repairing : wages.. ..     | 1589 71       |
| Repairing : materials..... | 132 94        |
| New troughs.....           |               |
|                            | <hr/> 1722 65 |

## HYDRANTS.

|  |                |
|--|----------------|
| Inspecting : wages.....                    | 11967 46       |
| Repairing : wages and materials.....       | 4069 95        |
| Thawing : horses and laborers.....         | 1068 92        |
| Rent of tap house, St. Jean Bte. ward..... | 97 07          |
|  | <hr/> 17203 40 |

## MISCELLANEOUS.

|   |               |
|---|---------------|
| Contingencies for office, drawing paper, &c., ink colours, instruments, &c..... | 1063 29       |
| Water analysis.....   | 89 10         |
| Horse keep superintendent.....  | 400 00        |
| do foreman.....   | 350 00        |
| Damages.....  | 1355 23       |
| School taxes and assesment outside municipalities.....                          | 534 09        |
|   | <hr/> 3791 71 |

# **SCHEDULE.—Continued.**

OF EXPENDITURE UP TO 31ST DECEMBER 1892.

## **SHOP IN ST. GABRIEL WARD.**

Spent.

|  |            |
|--|------------|
|  | \$ 3087 36 |
|  | 50 00      |
|  | 112 92     |
|  | 45 57      |
|  | <hr/>      |
|  | 3295 75    |

## **SHOP IN ST. JEAN BAPTISTE WARD.**

|  |         |
|--|---------|
|  | 2396 96 |
|  | 18 05   |
|  | 50 00   |
|  | 46 31   |
|  | <hr/>   |
|  | 2511 32 |

## **SHOP IN HOCHELAGA WARD.**

|  |         |
|--|---------|
|  | 1043 66 |
|  | 24 25   |
|  | 55 80   |
|  | <hr/>   |
|  | 1123 71 |

## **STAFF.**

|              |          |
|--------------|----------|
|              | 8500 00  |
| udent.       | 2000 00  |
|              | 1200 00  |
|              | 624 00   |
|              | 1000 00  |
| lary         | 900 00   |
| of inspector | 900 00   |
|              | 624 00   |
|              | <hr/>    |
|              | 10747 00 |

## **LOANS**

### **PIPE LAYING.**

|                                  |           |
|----------------------------------|-----------|
|                                  | 136567 66 |
| inc, &c.                         | 10436 80  |
|                                  | 8789 08   |
| ess works                        | 11615 91  |
| rd wood, &c.                     | 3328 47   |
| nd, clay, drain pipes, lime, &c. | 3006 22   |
| stings                           | 37522 74  |
| &c.                              | 4871 40   |
|                                  | 2304 94   |
| ipes                             | 118239 44 |
| iron pipes                       | 347 32    |

Carried \$337029 98





## INVENTORY.

SCHEDULE No. 15.—INVENTORY OF STOCK ON HAND, JANUARY 1893.

| DESCRIPTION.                  | 30"            | 24" | 20" | 16" | 12"  | 10" | 8"  | 6"   |
|-------------------------------|----------------|-----|-----|-----|------|-----|-----|------|
| Cast iron pipes (new) in feet | 9 <sup>h</sup> | 564 | 516 | 624 | 1632 | 24  | 168 | 1701 |

| DESCRIPTIONS.                       | 30" | 24" | 20" | 16"            | 12" | 10" | 8"  | 6"  | 4"  | 3" |
|-------------------------------------|-----|-----|-----|----------------|-----|-----|-----|-----|-----|----|
| Cast iron pipes (old) feet..        | 0   | 0   | 0   | 0              | 0   | 0   | 0   | 0   | 288 | 0  |
| Stop valves.....                    | 0   | 1   | 0   | 3              | 4   | 4   | 9   | 6   | 6   | 15 |
| Slip sockets.....                   | 1   | 34  | 3   | 25             | 22  | 10  | 14  | 18  | 73  | 11 |
| Cast iron caps.....                 | 3   | 11  | 17  | 12             | 89  | 65  | 117 | 47  | 57  | 30 |
| Cast iron plugs.....                | 2   | 9   | 15  | 1 <sup>h</sup> | 47  | 42  | 57  | 183 | 151 | 0  |
| Cast iron double bends.....         | 0   | 0   | 0   | 0              | 15  | 2   | 27  | 21  | 33  | 0  |
| Cast iron bends $\frac{1}{2}$ ..... | 1   | 4   | 6   | 9              | 19  | 21  | 40  | 50  | 68  | 0  |
| Cast iron bends $\frac{3}{4}$ ..... | 0   | 0   | 0   | 0              | 37  | 14  | 0   | 0   | 3   | 0  |
| Cast iron sweeps.....               | 0   | 0   | 0   | 0              | 2   | 6   | 0   | 1   | 0   | 0  |
| Radial sockets.....                 | 17  | 14  | 13  | 18             | 59  | 38  | 62  | 6   | 0   | 0  |

## CROSSES.

| 30 x 24 | 30 x 20 | 30 x 12 | 30 x 6 | 30 x 4 | 24 x 24 | 24 x 16 | 24 x 12 | 24 x 8 | 20 x 16 | 20 x 12 |
|---------|---------|---------|--------|--------|---------|---------|---------|--------|---------|---------|
| 1       | 2       | 7       | 2      | 1      | 6       | 4       | 5       | 2      | 1       | 5       |

| 16 x 16 | 16 x 12 | 12 x 12 | 12 x 10 | 12 x 8 | 12 x 6 | 12 x 4 | 10 x 10 | 10 x 8 | 10 x 6 | 10 x 4 |
|---------|---------|---------|---------|--------|--------|--------|---------|--------|--------|--------|
| 3       | 8       | 49      | 12      | 16     | 13     | 4      | 11      | 33     | 11     | 6      |

| 8 x 8 | 8 x 6 | 8 x 4 | 6 x 6 | 6 x 4 | 4 x 4 | 4 x 3 | 3 x 3 | 8 x 8 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 38    | 13    | 12    | 16    | 11    | 8     | 7     | 5     | 38    |

## TEES.

| 30 x 24 | 30 x 6 | 30 x 10 | 30 x 4 | 24 x 24 | 24 x 12 | 24 x 8 | 24 x 6 | 24 x 4 | 20 x 12 |
|---------|--------|---------|--------|---------|---------|--------|--------|--------|---------|
| 2       | 7      | 2       | 6      | 2       | 1       | 8      | 8      | 16     | 18      |

| 20 x 8 | 20 x 4 | 16 x 12 | 16 x 10 | 16 x 8 | 16 x 6 | 12 x 12 | 12 x 10 | 12 x 8 | 12 x 4 | 10 x 10 |
|--------|--------|---------|---------|--------|--------|---------|---------|--------|--------|---------|
| 2      | 5      | 13      | 20      | 3      | 2      | 16      | 21      | 40     | 10     | 17      |

## SCHEDULE No. 15 --INVENTORY.--Continued

STATEMENT SHOWING STOCK ON HAND DECEMBER THE 31st 1897.

## TEES.

| 10 x 8 | 10 x 6 | 10 x 4 | 8 x 8 | 8 x 6 | 8 x 4 | 6 x 6 | 6 x 4 | 4 x 4 |
|--------|--------|--------|-------|-------|-------|-------|-------|-------|
| 42     | 5      | 3      | 19    | 20    | 7     | 3     | 8     | 3     |

## TAPERS.

| 30 x 24 | 24 x 20 | 24 x 16 | 20 x 16 | 20 x 12 | 16 x 12 | 12 x 10 | 12 x 8 | 12 x 6 | 10 x 8 |
|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|
| 7       | 4       | 3       | 9       | 3       | 8       | 3       | 16     | 4      | 22     |

| 10 x 6 | 10 x 6 | 10 x 4 | 8 x 6 | 12 x 4 | 6 x 4 | 4 x 3 | 4 x 2 | 4 x 2 | 4 x 1 | 3 x 2 |
|--------|--------|--------|-------|--------|-------|-------|-------|-------|-------|-------|
| 10     | 24     | 20     | 5     | 9      | 48    | 5     | 14    | 8     | 12    | 2     |

| 3 x 2 | 3 x 1 | 2 1/2 x 2 | 2 1/2 x 1 | 2 x 1 1/2 |
|-------|-------|-----------|-----------|-----------|
| 14    | 11    | 11        | 11        | 12        |

## BREECHES.

| 30 x 24 | 10 x 30 | 14 x 14 | 20 x 20 | 10 x 16 | 12 x 12 | 10 x 10 | 8 x 8 | 6 x 6 |
|---------|---------|---------|---------|---------|---------|---------|-------|-------|
|         |         |         | 2       | 3       | 7       | 7       | 7     | 3     |

## CASTINGS FROM 3" TO 1 1/2"

## CUTS

| 3 x 3 | 3 x 2 | 3 x 1 1/2 |
|-------|-------|-----------|
| 1     | 11    | 12        |

| ELBOWS (SQ. ARE) |       |   |     |     | ELBOWS 1/2 SWEEP |    |        |
|------------------|-------|---|-----|-----|------------------|----|--------|
| 2                | 1 1/2 | 1 | 3/4 | 3/8 | 2 1/2"           | 2" | 1 1/2" |
| 21               | 0     | 2 | 26  | 54  |                  |    |        |

## No. 15 SCHEDULE.—INVENTORY.—(Continued.)

STATEMENT SHOWING STOCK ON HAND DECEMBER THE 31ST 1892.

## CASTINGS FROM 3" TO 1½"

| DOUBLE BENDS |     |    |     | BONNETS |     |    |
|--------------|-----|----|-----|---------|-----|----|
| 3"           | 2½" | 2" | 1½" | 3"      | 2½" | 2" |
| 6            | 6   | 6  | 6   | 2       | 16  | 15 |

| PLUGS |     |    |     | SOCKETS |     |    |     |
|-------|-----|----|-----|---------|-----|----|-----|
| 3"    | 2½" | 2" | 1½" | 3"      | 2½" | 2" | 1½" |
| 23    | 17  | 17 | 33  | 48      | 54  | 47 | 42  |

|                         |     |                                     |     |
|-------------------------|-----|-------------------------------------|-----|
| hydrants (5 noz.) ..... | 46  | Street watering nozels (brass)..... | 675 |
| iron fender posts.....  | 2   | Hydrant nozels (brass).....         | 40  |
| orted valve covers..... | 134 | Assorted spindles.....              | 85  |
| rants already used..... | 7   | Rods for stop-cocks assorted.....   | 92  |

|                              |     |  |        |
|------------------------------|-----|--|--------|
| neumatic stop cocks.....     | 14  | 2" iron pipe in feet .....             | 10     |
| " " .....                    | 17  | 1½" " " .....                          | 30     |
| " " .....                    | 172 | 1" " " .....                           | 100    |
| y " " .....                  | 7   | 281 rolls of 1" lead pipe, weight..... | 67,446 |
| " " .....                    | 8   | 5 " of ½" " " .....                    | 1,100  |
| " " .....                    | 12  | 483 " of ½" " " .....                  | 70,518 |
| round cocks .....            | 128 | Lead (pig) in lbs. 259 bars.....       | 25,900 |
| " " .....                    | 42  | Tin (ingot) in lbs.....                | 100    |
| " " .....                    | 3   | ½" copper tubing in lbs. ....          | 2,610  |
| nozels.....                  | 19  | 4" iron boxes.....                     | 20     |
| " .....                      | 81  | Footpath plates complete.....          | 635    |
| " .....                      | 69  | Cast iron caps for tube boxes .....    | 198    |
| 5" tees.....                 | 9   |  |        |
| s.....                       | 31  |  |        |
| orted covers for boxes ..... | 41  |  |        |

JOHN FALLON,  
Foreman at Shop.

## No. 16 SCHEDULE.—Continued

STORES, SHOPS, OFFICES, &c. &c.

[illegible]

No. 16 SCHEDULE.—*Continued.*

## STATEMENT OF ARREARS ON WATER RATES.

|            | Balance due<br>on 1st January<br>1892. | Collected in<br>1892. | Written<br>off in<br>1892. | Outstanding<br>balance on 1st<br>January 1893. |
|------------|--|-----------------------|----------------------------|--|
|            | \$ c.                                  | \$ c.                 | \$ c.                      | \$ c.  |
| previous.. | 29037 52                               | .....                 | .....                      | 29037 52                                       |
| " ..       | 14688 63                               | .....                 | .....                      | 14688 63                                       |
| " ..       | 22766 63                               | .....                 | .....                      | 22766 63                                       |
| " ..       | 31835 06                               | .....                 | .....                      | 31835 06                                       |
| " ..       | 21308 26                               | .....                 | .....                      | 21308 26                                       |
| " ..       | 35166 57                               | .....                 | .....                      | 35166 57                                       |
| " ..       | 45123 35                               | .....                 | .....                      | 45123 35                                       |
| " ..       | 51176 20                               | 305 54                | .....                      | 50870 66                                       |
| " ..       | 74247 36                               | 4164 88               | .....                      | 70082 48                                       |
| " ..       | 146166 57                              | 71616 34              | .....                      | 74550 23                                       |
|            | <u>471516 15</u>                       | <u>76086 76</u>       | <u>.....</u>               | <u>395429 39</u>                               |

## MISCELLANEOUS:

|                                      |                |
|--------------------------------------|----------------|
| Building purposes .....              | \$ 2702 28     |
| Hose licences .....                  | 888 00         |
| Water sold in St. Jean Bap'te ward.. | 91 26          |
| Special items .....                  | 1813 51        |
| Various.....                         | 519 13         |
| Total .....                          | <u>6014 18</u> |

6. **STANDARDIZATION**—Continued

**BRUNNEN** **WATER** **SYSTEMS** **INC.**

| Year | 1911 | 1912 | 1913 | 1914 | 1915 | 1916 | 1917 | 1918 | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | 1929 | 1930 | 1931 | 1932 | 1933 | 1934 | 1935 | 1936 | 1937 | 1938 | 1939 | 1940 | 1941 | 1942 | 1943 | 1944 | 1945 | 1946 | 1947 | 1948 | 1949 | 1950 | 1951 | 1952 | 1953 | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1965 | 1966 | 1967 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 | 2051 | 2052 | 2053 | 2054 | 2055 | 2056 | 2057 | 2058 | 2059 | 2060 | 2061 | 2062 | 2063 | 2064 | 2065 | 2066 | 2067 | 2068 | 2069 | 2070 | 2071 | 2072 | 2073 | 2074 | 2075 | 2076 | 2077 | 2078 | 2079 | 2080 | 2081 | 2082 | 2083 | 2084 | 2085 | 2086 | 2087 | 2088 | 2089 | 2090 | 2091 | 2092 | 2093 | 2094 | 2095 | 2096 | 2097 | 2098 | 2099 | 2100 | 2101 | 2102 | 2103 | 2104 | 2105 | 2106 | 2107 | 2108 | 2109 | 2110 | 2111 | 2112 | 2113 | 2114 | 2115 | 2116 | 2117 | 2118 | 2119 | 2120 | 2121 | 2122 | 2123 | 2124 | 2125 | 2126 | 2127 | 2128 | 2129 | 2130 | 2131 | 2132 | 2133 | 2134 | 2135 | 2136 | 2137 | 2138 | 2139 | 2140 | 2141 | 2142 | 2143 | 2144 | 2145 | 2146 | 2147 | 2148 | 2149 | 2150 | 2151 | 2152 | 2153 | 2154 | 2155 | 2156 | 2157 | 2158 | 2159 | 2160 | 2161 | 2162 | 2163 | 2164 | 2165 | 2166 | 2167 | 2168 | 2169 | 2170 | 2171 | 2172 | 2173 | 2174 | 2175 | 2176 | 2177 | 2178 | 2179 | 2180 | 2181 | 2182 | 2183 | 2184 | 2185 | 2186 | 2187 | 2188 | 2189 | 2190 | 2191 | 2192 | 2193 | 2194 | 2195 | 2196 | 2197 | 2198 | 2199 | 2200 | 2201 | 2202 | 2203 | 2204 | 2205 | 2206 | 2207 | 2208 | 2209 | 2210 | 2211 | 2212 | 2213 | 2214 | 2215 | 2216 | 2217 | 2218 | 2219 | 2220 | 2221 | 2222 | 2223 | 2224 | 2225 | 2226 | 2227 | 2228 | 2229 | 2230 | 2231 | 2232 | 2233 | 2234 | 2235 | 2236 | 2237 | 2238 | 2239 | 2240 | 2241 | 2242 | 2243 | 2244 | 2245 | 2246 | 2247 | 2248 | 2249 | 2250 | 2251 | 2252 | 2253 | 2254 | 2255 | 2256 | 2257 | 2258 | 2259 | 2260 | 2261 | 2262 | 2263 | 2264 | 2265 | 2266 | 2267 | 2268 | 2269 | 2270 | 2271 | 2272 | 2273 | 2274 | 2275 | 2276 | 2277 | 2278 | 2279 | 2280 | 2281 | 2282 | 2283 | 2284 | 2285 | 2286 | 2287 | 2288 | 2289 | 2290 | 2291 | 2292 | 2293 | 2294 | 2295 | 2296 | 2297 | 2298 | 2299 | 2300 | 2301 | 2302 | 2303 | 2304 | 2305 | 2306 | 2307 | 2308 | 2309 | 2310 | 2311 | 2312 | 2313 | 2314 | 2315 | 2316 | 2317 | 2318 | 2319 | 2320 | 2321 | 2322 | 2323 | 2324 | 2325 | 2326 | 2327 | 2328 | 2329 | 2330 | 2331 | 2332 | 2333 | 2334 | 2335 | 2336 | 2337 | 2338 | 2339 | 2340 | 2341 | 2342 | 2343 | 2344 | 2345 | 2346 | 2347 | 2348 | 2349 | 2350 | 2351 | 2352 | 2353 | 2354 | 2355 | 2356 | 2357 | 2358 | 2359 | 2360 | 2361 | 2362 | 2363 | 2364 | 2365 | 2366 | 2367 | 2368 | 2369 | 2370 | 2371 | 2372 | 2373 | 2374 | 2375 | 2376 | 2377 | 2378 | 2379 | 2380 | 2381 | 2382 | 2383 | 2384 | 2385 | 2386 | 2387 | 2388 | 2389 | 2390 | 2391 | 2392 | 2393 | 2394 | 2395 | 2396 | 2397 | 2398 | 2399 | 2400 | 2401 | 2402 | 2403 | 2404 | 2405 | 2406 | 2407 | 2408 | 2409 | 2410 | 2411 | 2412 | 2413 | 2414 | 2415 | 2416 | 2417 | 2418 | 2419 | 2420 | 2421 | 2422 | 2423 | 2424 | 2425 | 2426 | 2427 | 2428 | 2429 | 2430 | 2431 | 2432 | 2433 | 2434 | 2435 | 2436 | 2437 | 2438 | 2439 | 2440 | 2441 | 2442 | 2443 | 2444 | 2445 | 2446 | 2447 | 2448 | 2449 | 2450 | 2451 | 2452 | 2453 | 2454 | 2455 | 2456 | 2457 | 2458 | 2459 | 2460 | 2461 | 2462 | 2463 | 2464 | 2465 | 2466 | 2467 | 2468 | 2469 | 2470 | 2471 | 2472 | 2473 | 2474 | 2475 | 2476 | 2477 | 2478 | 2479 | 2480 | 2481 | 2482 | 2483 | 2484 | 2485 | 2486 | 2487 | 2488 | 2489 | 2490 | 2491 | 2492 | 2493 | 2494 | 2495 | 2496 | 2497 | 2498 | 2499 | 2500 | 2501 | 2502 | 2503 | 2504 | 2505 | 2506 | 2507 | 2508 | 2509 | 2510 | 2511 | 2512 | 2513 | 2514 | 2515 | 2516 | 2517 | 2518 | 2519 | 2520 | 2521 | 2522 | 2523 | 2524 | 2525 | 2526 | 2527 | 2528 | 2529 | 2530 | 2531 | 2532 | 2533 | 2534 | 2535 | 2536 | 2537 | 2538 | 2539 | 2540 | 2541 | 2542 | 2543 | 2544 | 2545 | 2546 | 2547 | 2548 | 2549 | 2550 | 2551 | 2552 | 2553 | 2554 | 2555 | 2556 | 2557 | 2558 | 2559 | 2560 | 2561 | 2562 | 2563 | 2564 | 2565 | 2566 | 2567 | 2568 | 2569 | 2570 | 2571 | 2572 | 2573 | 2574 | 2575 | 2576 | 2577 | 2578 | 2579 | 2580 | 2581 | 2582 | 2583 | 2584 | 2585 | 2586 | 2587 | 2588 | 2589 | 2590 | 2591 | 2592 | 2593 | 2594 | 2595 | 2596 | 2597 | 2598 | 2599 | 2600 | 2601 | 2602 | 2603 | 2604 | 2605 | 2606 | 2607 | 2608 | 2609 | 2610 | 2611 | 2612 | 2613 | 2614 | 2615 | 2616 | 2617 | 2618 | 2619 | 2620 | 2621 | 2622 | 2623 | 2624 | 2625 | 2626 | 2627 | 2628 | 2629 | 2630 | 2631 | 2632 | 2633 | 2634 | 2635 | 2636 | 2637 | 2638 | 2639 | 2640 | 2641 | 2642 | 2643 | 2644 | 2645 | 2646 | 2647 | 2648 | 2649 | 2650 | 2651 | 2652 | 2653 | 2654 | 2655 | 2656 | 2657 | 2658 | 2659 | 2660 | 2661 | 2662 | 2663 | 2664 | 2665 | 2666 | 2667 | 2668 | 2669 | 2670 | 2671 | 2672 | 2673 | 2674 | 2675 | 2676 | 2677 | 2678 | 2679 | 2680 | 2681 | 2682 | 2683 | 2684 | 2685 | 2686 | 2687 | 2688 | 2689 | 2690 | 2691 | 2692 | 2693 | 2694 | 2695 | 2696 | 2697 | 2698 | 2699 | 2700 | 2701 | 2702 | 2703 | 2704 | 2705 | 2706 | 2707 | 2708 | 2709 | 2710 | 2711 | 2712 | 2713 | 2714 | 2715 | 2716 | 2717 | 2718 | 2719 | 2720 | 2721 | 2722 | 2723 | 2724 | 2725 | 2726 | 2727 | 2728 | 2729 | 2730 | 2731 | 2732 | 2733 | 2734 | 2735 | 2736 | 2737 | 2738 | 2739 | 2740 | 2741 | 2742 | 2743 | 2744 | 2745 | 2746 | 2747 | 2748 | 2749 | 2750 | 2751 | 2752 | 2753 | 2754 | 2755 | 2756 | 2757 | 2758 | 2759 | 2760 | 2761 | 2762 | 2763 | 2764 | 2765 | 2766 | 2767 | 2768 | 2769 | 2770 | 2771 | 2772 | 2773 | 2774 | 2775 | 2776 | 2777 | 2778 | 2779 | 2780 | 2781 | 2782 | 2783 | 2784 | 2785 | 2786 | 2787 | 2788 | 2789 | 2790 | 2791 | 2792 | 2793 | 2794 | 2795 | 2796 | 2797 | 2798 | 2799 | 2800 | 2801 | 2802 | 2803 | 2804 | 2805 | 2806 | 2807 | 2808 | 2809 | 2810 | 2811 | 2812 | 2813 | 2814 | 2815 | 2816 | 2817 | 2818 | 2819 | 2820 | 2821 | 2822 | 2823 | 2824 | 2825 | 2826 | 2827 | 2828 | 2829 | 2830 | 2831 | 2832 | 2833 | 2834 | 2835 | 2836 | 2837 | 2838 | 2839 | 2840 | 2841 | 2842 | 2843 | 2844 | 2845 | 2846 | 2847 | 2848 | 2849 | 2850 | 2851 | 2852 | 2853 | 2854 | 2855 | 2856 | 2857 | 2858 | 2859 | 2860 | 2861 | 2862 | 2863 | 2864 | 2865 | 2866 | 2867 | 2868 | 2869 | 2870 | 2871 | 2872 | 2873 | 2874 | 2875 | 2876 | 2877 | 2878 | 2879 | 2880 | 2881 | 2882 | 2883 | 2884 | 2885 | 2886 | 2887 | 2888 | 2889 | 2890 | 2891 | 2892 | 2893 | 2894 | 2895 | 2896 | 2897 | 2898 | 2899 | 2900 | 2901 | 2902 | 2903 | 2904 | 2905 | 2906 | 2907 | 2908 | 2909 | 2910 | 2911 | 2912 | 2913 | 2914 | 2915 | 2916 | 2917 | 2918 | 2919 | 2920 | 2921 | 2922 | 2923 | 2924 | 2925 | 2926 | 2927 | 2928 | 2929 | 2930 | 2931 | 2932 | 2933 | 2934 | 2935 | 2936 | 2937 | 2938 | 2939 | 2940 | 2941 | 2942 | 2943 | 2944 | 2945 | 2946 | 2947 | 2948 | 2949 | 2950 | 2951 | 2952 | 2953 | 2954 | 2955 | 2956 | 2957 | 2958 | 2959 | 2960 | 2961 | 2962 | 2963 | 2964 | 2965 | 2966 | 2967 | 2968 | 2969 | 2970 | 2971 | 2972 | 2973 | 2974 | 2975 | 2976 | 2977 | 2978 | 2979 | 2980 | 2981 | 2982 | 2983 | 2984 | 2985 | 2986 | 2987 | 2988 | 2989 | 2990 | 2991 | 2992 | 2993 | 2994 | 2995 | 2996 | 2997 | 2998 | 2999 | 3000 | 3001 | 3002 | 3003 | 3004 | 3005 | 3006 | 3007 | 3008 | 3009 | 3010 | 3011 | 3012 | 3013 | 3014 | 3015 | 3016 | 3017 | 3018 | 3019 | 3020 | 3021 | 3022 | 3023 | 3024 | 3025 | 3026 | 3027 | 3028 | 3029 | 3030 | 3031 | 3032 | 3033 | 3034 | 3035 | 3036 | 3037 | 3038 | 3039 | 3040 | 3041 | 3042 | 3043 | 3044 | 3045 | 3046 | 3047 | 3048 | 3049 | 3050 | 3051 | 3052 | 3053 | 3054 | 3055 | 3056 | 3057 | 3058 | 3059 | 3060 | 3061 | 3062 | 3063 | 3064 | 3065 | 3066 | 3067 | 3068 | 3069 | 3070 | 3071 | 3072 | 3073 | 3074 | 3075 | 3076 | 3077 | 3078 | 3079 | 3080 | 3081 | 3082 | 3083 | 3084 | 3085 | 3086 | 3087 | 3088 | 3089 | 3090 | 3091 | 3092 | 3093 | 3094 | 3095 | 3096 | 3097 | 3098 | 3099 | 3100 | 3101 | 3102 | 3103 | 3104 | 3105 | 3106 | 3107 | 3108 | 3109 | 3110 | 3111 | 3112 | 3113 | 3114 | 3115 | 3116 | 3117 | 3118 | 3119 | 3120 | 3121 | 3122 | 3123 | 3124 | 3125 | 3126 | 3127 | 3128 | 3129 | 3130 | 3131 | 3132 | 3133 | 3134 | 3135 | 3136 | 3137 | 3138 | 3139 | 3140 | 3141 | 3142 | 3143 | 3144 | 3145 | 3146 | 3147 | 3148 | 3149 | 3150 | 3151 | 3152 | 3153 | 3154 | 3155 | 3156 | 3157 | 3158 | 3159 | 3160 | 3161 | 3162 | 3163 | 3164 | 3165 | 3166 | 3167 | 3168 | 3169 | 3170 | 3171 | 3172 | 3173 | 3174 | 3175 | 3176 | 3177 | 3178 | 3179 | 3180 | 3181 | 3182 | 3183 | 3184 | 3185 | 3186 | 3187 | 3188 | 3189 | 3190 | 3191 | 3192 | 3193 | 3194 | 3195 | 3196 | 3197 | 3198 | 3199 | 3200 | 3201 | 3202 | 3203 | 3204 | 3205 | 3206 | 3207 | 3208 | 3209 | 3210 | 3211 | 3212 | 3213 | 3214 | 3215 | 3216 | 3217 | 3218 | 3219 | 3220 | 3221 | 3222 | 3223 | 3224 | 3225 | 3226 | 3227 | 3228 | 3229 | 3230 | 3231 | 3232 | 3233 | 3234 | 3235 | 3236 | 3237 | 3238 | 3239 | 3240 | 3241 | 3242 | 3243 | 3244 | 3245 | 3246 | 3247 | 3248 | 3249 | 3250 | 3251 | 3252 | 3253 | 3254 | 3255 | 3256 | 3257 | 3258 | 3259 | 3260 | 3261 | 3262 | 3263 | 3264 | 3265 | 3266 | 3267 | 3268 | 3269 | 3270 | 3271 | 3272 | 3273 | 3274 | 3275 | 3276 | 3277 | 3278 | 3279 | 3280 | 3281 | 3282 | 3283 | 3284 | 3285 |
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W. M. Baker

1894

1894

# ANNUAL REPORT

OF THE

## SUPERINTENDENT

OF THE

# Montreal Water Works

FOR THE

## YEAR ENDING 31st DECEMBER 1893

PRINTED BY ORDER OF THE WATER COMMITTEE.



12-28-94 - "Water"

Montreal

EUSÈBE SENÉCAL & FILS, PRINTERS.

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# ANNUAL REPORT

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1894



ANNUAL REPORT  
OF THE  
SUPERINTENDENT OF THE MONTREAL WATER WORKS  
FOR THE  
YEAR ENDING 31st DECEMBER 1893.

---

WATER WORKS OFFICE. CITY HALL  
Montreal.

*To the*

*Mayor, Aldermen and Citizens of the City of Montreal.*

GENTLEMEN,

I have the honour to present you with the report of the operation of the Water Department for the year ending 1893.

The general condition of the works and the important improvements and repairs required in the future, the subject being as follows :

1. Aqueduct.—2. Low Level Pumping Station, with its Pumping Machinery. 3. Machine Shop and Foundry. 4. Tail Race. 5. Pipe Track and Pumping Mains. 6. Reservoirs. 7. High Level service. 8. Pipe Laying. 9. Maintenance of Distribution and Service Pipes, Hydrants and Fountains. 10. Consumption of Water. 11. Meters and House to House Inspection. 12. Administration. 13. General Remarks. An appendix comprising reports from the Assistant Superintendent and other officials of the Department, together with tabular statements showing works that have been done during the year, and money expended, and giving useful information, is also attached.

I have to state that during the year of 1893 a large number of changes have been made in the way of improvements in the services in various ways. A large number of pneumatic cocks which have been giving considerable trouble and causing a large amount



## IV

of expense, have been taken out, to the number of 152 and improved hydrants have also been put in to the number of 120. During the whole of the winter which was very severe, not one of those were found frozen. They are thoroughly frost proof and will require no inspection, which is a very expensive item, during the winter particularly.

We have obtained also by a Resolution of the Finance Committee, a new 10,000,000 gallon Worthington Pumping Engine, from the Worthington Co., at a cost of \$55,000 delivered on foundation. This engine will be erected and completed for operation in the course of the beginning of the year 1894. A battery of three new Heine boilers will also be erected in the middle space of the boiler house to replace three old Lancashire boilers, now condemned, which will add considerable safety to our pumping capacity during the winter.

## AQUEDUCT.

I regret to say that the Aqueduct retaining angle wall at the entrance was reported in my last report as in great need of extensive repairs. I recommended the purchase of 3 acres of water frontage from the opening of Aqueduct West, so that it may be fenced in from the public highway and that an additional angle wall be built out in the River to divert the water that sweeps the river shore, from Lachine down, from passing into the Aqueduct and driving it past the end of the present retaining wall down the river. Likewise I reported on very extensive system of ditches to carry surface water away, and to prevent the farms along the line of the Aqueduct from being damaged by water during heavy rain falls in the spring and fall. All the bridges crossing the Aqueduct require repairs, viz 12, 13, 14, and 15 should have been renewed with iron girders, and all the others should also have been replaced with girders, say 2 per annum, after the first four have been renewed.

The pier of the stone bridge now standing in the middle of the Aqueduct should be removed at once, but I regret having to state that no appropriation of money was allowed during the year to do any of the above mentioned work, consequently they have remained in the same condition that they were in the year previous, only some of the worst bridges have deteriorated so that they are now dangerous to make use of. I am in hopes that the year 1894 will bring forth the necessary money to repair all the above mentioned bridges and retaining angle wall, to prevent very heavy expenses being incurred later on, as they are so delapidated that renewing them will certainly have to be carried out in the near future.

I am pleased to say that the Council granted an appropriation of \$16,453.00 for a new independent suction pipe as per my report of the previous year, from the Aqueduct to the wells of the pumping engines which will be put in the spring of 1894, thus giving the facility of shutting off by log gates the Settling Pond, so that repairs can be operated, likewise the cleaning of the same, and during which time the City can be supplied with water direct from the Aqueduct without interruption.

## 2. LOW LEVEL PUMPING SATION WORKS.

No 1 Turbine is in fair condition of repairs, so that little expense was incurred on this turbine during the year, and is considered in rather good condition now. The interior of the building in this No 1 turbine space, has received some repairs and renovating.

No 2. The old Breast Wheel which I condemned in August 1892, on my assuming the position of Superintendent of this Department, I am glad to say has been removed, and the Council have granted \$22,078.00, acquiescing to my report asking to have it replaced by a first class economical pair of Worthington Double acting Plunger pumps, driven by a double turbine wheel of the most improved pattern laid on horizontal shaft. These will also be put into operation during the year 1894, thus giving a capacity of 5,000,000 gallons per 24 hours, that will be pumped free of fuel cost.

No 3 Turbine is in fair condition, but will require some repairs at a very early date, it is of the oldest type and requires frequent repairs, consequently it is not at all economical to run, and should be replaced at an early date by a similar one to the one mentioned above.

No 4 Turbine is likewise in fair order, but of the same wasteful type so that this pair of wheels, Nos. 3 & 4 are under the same condition and fill the space that should be taken up by a pair of wheels and pumps that would make the machinery uniform and economical under the same roof of building and under the same condition.

No. 1 Steam Pumping Engine. This engine has worked well during the whole year, and performed heavy duty on account of the early closing down of the pumping turbines, the cause of extensive cold and under an increased consumption of water, rendering the necessity of running both Nos. 1 & 3 night and day constantly. Very little repairs have been done to this engine.

No. 3 Engine also worked well with very little repairs.

The new 10,000,000 pumping engine purchased, as mentioned in the opening of this report, will arrive and be erected on its foundation in the early part of the coming year, which will give the

# VI

required capacity as reported and requested in my report of last year, while the new battery of boilers will likely be purchased during the coming year and put into operation.

The work turned out during the year from the machine shop at the wheel house is as follows :

|      |                                     |  |
|------|-------------------------------------|--|
| 8    | 3                                   | nozzel hydrants new style.             |
| 42   | 5                                   | " " old "                              |
| 46   | 5                                   | " " new "                              |
| 20   | 4"                                  | valves old style.                      |
| 7    | 6"                                  | " "                                    |
| 64   | 8"                                  | " "                                    |
| 7    | 10"                                 | " "                                    |
| 18   | 12"                                 | " "                                    |
| 16   | 4"                                  | valves new style.                      |
| 21   | 8"                                  | " "                                    |
| 8    | 10"                                 | " "                                    |
| 24   | 12"                                 | " "                                    |
| 11   | 4"                                  | new valve spindles                     |
| 14   | 6"                                  | " "                                    |
| 2    | 12"                                 | " "                                    |
| 10   | 12"                                 | " nuts.                                |
| 20   | 12"                                 | " washers.                             |
| 6    |                                     | Glass water gauges mountings           |
| 6    |                                     | Top nuts for 3 nozzel hydrants.        |
| 6    |                                     | " 5 "                                  |
| 8    |                                     | Air cocks for No. 1 wheel pump chests. |
| 957  | $\frac{1}{2}$ "                     | Stop cocks                             |
| 482  | $\frac{3}{8}$ "                     | Ditto                                  |
| 1838 | $\frac{1}{2}$ "                     | Couplings                              |
| 2229 | $\frac{3}{8}$ "                     | Ditto                                  |
| 326  | $\frac{1}{2}$ "                     | Pneumatic stop valves.                 |
| 86   | $\frac{3}{8}$ "                     | Ditto                                  |
| 1613 | $\frac{3}{8}$ "                     | Nozzels                                |
| 75   | 1"                                  | "                                      |
| 75   | 1"                                  | Couplings                              |
| 12   | 1" x 4 $\frac{1}{2}$ "              | Studs                                  |
| 12   | $\frac{3}{4}$ " x 4 $\frac{1}{2}$ " | "                                      |
| 6    | $\frac{5}{8}$ " x 14"               | "                                      |
| 12   | $\frac{7}{8}$ " x 4"                | "                                      |
| 6    | $\frac{3}{4}$ " x 14"               | "                                      |
| 24   | 1 $\frac{1}{4}$ "                   | Meter couplings                        |
| 385  | 1"                                  | Service caps                           |
| 36   |                                     | Watering nozzels                       |
| 204  | $\frac{1}{2}$ " x $\frac{5}{8}$ "   | Reducing couplings.                    |

## VII

|     |   |                    |
|-----|---|--------------------|
| 1   | Drift for water meter.                    |                    |
| 2   | Large brass nozzels for 5 nozzel hydrant. |                    |
| 986 | Tube caps.                                |                    |
| 572 | Union couplings.                          |                    |
| 320 | Pointed ends.                             |                    |
| 812 | Round ends.                               |                    |
| 450 | Square ends.                              |                    |
| 554 | Nipples.                                  |                    |
| 12  | 2" Brass plugs.                           |                    |
| 3   | 4" Valve glands.                          |                    |
| 2   | Pieces for lathe.                         |                    |
| 37  | $\frac{5}{8}$ Steel nozzel drills.        |                    |
| 1   | Spindle for lathe.                        |                    |
| 1   | 12" valve stuffing box.                   |                    |
| 4   | Bolts and nuts for same.                  |                    |
| 65  | Brass wire springs                        | Eng. No. 1.        |
| 1   | Piece casting drilled                     | St. Chas. B. Shop. |
| 1   | Brass screw for counter                   | H. L. P. S.        |
| 2   | Pieces 12" pipe flanged for 12" valve.    |                    |
| 4   | Bolts and nuts for same.                  |                    |
| 6   | Nuts and 6 washers for 5 nozzel hydrant.  |                    |
| 12  | $\frac{5}{8}$ nuts for 5 nozzel hydrant.  |                    |
| 43  | Hydr. brass sockets.                      |                    |

### REPAIRS

|    |  |  |
|----|--|--|
| 1  | 5 Nozzel hydr. foot valve turned anew and sludge cock changed. |  |
| 1  | 5 Nozzle dydr. furnished with new valve and piston.            |  |
| 10 | 5 " " " wtth new brass sockets.                                |  |
| 13 | 3 " " " " "  |  |
| 20 | 2 " " " " "  |  |
| 1  | Force pump.  |  |
| 1  | Screwing machine.  |  |
| 1  | Globe valve furnished with new spindle.                        |  |
| 9  | Old style 4" valves " " "                                      |  |
| 1  | " 6" " gate faced anew.  |  |
| 1  | " 5" " furnished with new nut and spindle.                     |  |
| 1  | Lead pipe flanging machine.                                    |  |
| 2  | Footpath augers.   |  |
| 1  | Air pump bucket.   |  |
| 1  | Steam valve gland.   |  |
| 1  | Boiler feed pump.  |  |
| 1  | 2" Globe valve furnished with new brass spindle.               |  |
| 1  | Stop valve.  |  |
| 23 | Fire irons.  |  |
|    | Brass castings delivered from Foundry during the year          |  |
|    | 21,554 $\frac{1}{4}$ lbs.                                      |  |

The work of the Committee has been to make a study of the various methods of filling the High Level and to determine the most efficient and economical method of doing so.

### THE HIGH LEVEL

The High Level is a large body of water which is used for the storage of water for the use of the various industries and for the use of the various municipalities.

### THE HIGH LEVEL AND THE FILLING

The High Level is a large body of water which is used for the storage of water for the use of the various industries and for the use of the various municipalities. The filling of the High Level is a very important matter and it is one which has been the subject of much study and discussion.

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## IX

300,000 gallons per hour, or even more, through the cross wall. The top layer of stone coping requires to be removed and sections of this cross wall should be rebuilt piece by piece so as to avoid a large outlay at first, and to prevent the shutting off completely for any length of time. The valves are also in the same condition and require extensive repairs. In fact the entire report made last year has to be repeated this year, as no means were granted to carry out the repairs asked for.

### 7. HIGH LEVEL SERVICE.

The pumping engine is getting into worse order day by day, likewise the boilers in their expensively set condition, are becoming more wasteful. The Engineers dwelling is also in great need of repairs. The fences around the Reservoir are tumbling down and no means afforded for their maintainance. Coal shed as reported last year, is too small, a large amount of last year's coal has to be left out exposed to the snow and cold, so that at least from 10 o/10 of its actual value is wasted of account of its being so exposed.

### 8. PIPE LAYING.

The total length of cast iron pipes laid during the year 1893, is as follows, 54,455 feet, equal to 10.31 miles, the weight of metal meing 2,279.11 tons. The different sizes of pipes laid, their lengths and weights, and the number of valves of different sizes put in, are as follows :

| Sizes.     | Length in feet. | Weight in tons. | Number of valves. |
|------------|-----------------|-----------------|-------------------|
| 24         | 3527            | 434.70          | 3                 |
| 20         | 26              | 1.33            | 1                 |
| 16         | 2278            | 155.06          | 2                 |
| 12         | 23260           | 1048.77         | 64                |
| 10         | 1979            | 61.58           | 19                |
| 8          | 21230           | 548.13          | 99                |
| 6          | 865             | 15.20           | 13                |
| 4          | 1290            | 14.34           | 55                |
| <hr/>      |                 |                 |                   |
| Total..... | 54,455          | 2279.11         | 246               |

### 9. NEW HYDRANTS, Etc.

|  |     |
|--|-----|
| New 5 nozzle hydrants put in during 1893.....      | 113 |
| (Including 29 hydrants of the latest improvements) |     |
| New 2 nozzle hydrants put in during 1843.....      | 7   |
| <hr/>  |     |
| Total.....   | 120 |



## 11. CONSUMPTION OF WATER.

The quantity of water pumped during the year 1893, is 6,352,735,336 gallons, or a daily average of 17,404,754 gallons, an increase of 2,927,370 gallons daily over 1892. Average water pumped by water wheels per day 8,117,407 gallons. Average water pumped by steam pumping engines per day 9,287,347 gallons. No. 5 tableau shows all averages.

## 12. ADMINISTRATION.

Schedule 14 gives the details of the year's expenditure for maintenance, as well as for permanent improvements. The former amounts to \$163,997.00 the latter amounts to \$266,796.92, taken from loans and is principally for pipe laying.

## 13. GENERAL REMARKS.

The regulations in the administration of the Department which I prepared in my last report to have changed, have been carried. The efficient working of the office and a clearer record of the registering of all documents received both for the Water Committee and the correct management of the Department has been carried out. Also a system in finding all the service cocks, which have had to be carried out by a special house to house inspector and service to service, finding and measuring and, registering, in order to complete the new maps, showing the exact locality of each water service, given per measurement and per number of street and per name of street, has been nearly completed. When it is finished a key book will be compiled which will facilitate the finding of each service by any ordinary hand, to turn on and off the water, without the necessary expense as has been in the past, of having to hunt round and dig at many places, particularly in winter, when a leak took place from the bursting or breakage of a service pipe causing damages by water running into cellars etc. I am happy to say that this class of expense has been reduced very much and will in due time completely disappear, when all the proper service pipes, and new system, stronger and better material in both water cock pipes and boxes, have been completed. In the improvement of valves, hydrants, water services and the proper adjustment in pipe laying, and in the improvement in the system of our machine shops, foundry and engines houses, etc. : a large amount will be saved in the operation of the Department, when all has been completed.

I have the honour to be, Gentlemen,

Your obedient servant,

A. DAVIS,

*Superintendent of M. W. W.*





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# REPORT

OF

## ASSISTANT-SUPERINTENDENT.

A. DAVIS, Esq.

*Supt. M. W. W.*

DEAR SIR,

I herewith beg to submit for your information the following brief report upon the meter and house service inspection branches of the Water Department for the year 1893.

### METERS.

The number of meters in use at the end of the year was 779.

The City owns 704, the other 75 belong to private individuals or companies.

There were 98 new places metered, and 81 meters in use were discontinued. There were 133 changes of meters for various reasons, some being out of order and others too small.

The number of meters damaged by frost was 21, two of these were completely destroyed.

The Department purchased no meters in 1893 although it is well known that it is very advantageous for the Department to have its own meters employed, it is besides this a source of revenue.

Private parties purchased during the year 1893, 14 Crown Meters.

|       |   |     |
|-------|---|-----|
| 1     | — | 6"  |
| 1     | — | 4"  |
| 1     | — | 2"  |
| 1     | — | 1½" |
| 5     | — | 1"  |
| 3     | — | ¾"  |
| 2     | — | ½"  |
| <hr/> |   |     |
| 14    |   |     |

he water sold by meter in 1893 and the year previous, is as  
ows :

|   | 1892<br>Millions of<br>gallons. | 1893<br>Millions of<br>gallons. |
|---|---------------------------------|---------------------------------|
| ways, including Street Railway.....                   | 68 84                           | 86 98                           |
| ries and engines.....                                 | 179 75                          | 202 25                          |
| itors etc., including those at railways and hotels    | 175 86                          | 162 29                          |
| eries.....  | 28 59                           | 30 26                           |
| s .....   | 36 25                           | 42 01                           |
| ols, Convents and Colleges.....                       | 28 67                           | 36 29                           |
| itals and houses.....                                 | 6 77                            | 7 37                            |
| ch organs.....  | 6 69                            | 6 89                            |
| ellaneous, photographers, livery stables dyers etc... | 31 85                           | 8 93                            |
| ide City limits.....                                  | 109 48                          | 104 66                          |
| Totals.....   | 672 75                          | 687 86                          |

Showing an increase of 2¼ 070 over 1892.

The following is a list of meters in use from 1876 to 1892 :

| Years.    | Property of<br>W. W. Dept. | Property of<br>Private Parties. | Totals. |
|-----------|----------------------------|---------------------------------|---------|
| 1876..... | 279.....                   | 68.....                         | 347     |
| 1877..... | 294.....                   | 74.....                         | 368     |
| 1878..... | 239.....                   | 73.....                         | 312     |
| 1879..... | 227.....                   | 70.....                         | 297     |
| 1880..... | 236.....                   | 69.....                         | 305     |
| 1881..... | 266.....                   | 65.....                         | 331     |
| 1882..... | 307.....                   | 63.....                         | 370     |
| 1883..... | 380.....                   | 46.....                         | 426     |
| 1884..... | 421.....                   | 47.....                         | 468     |
| 1885..... | 467.....                   | 41.....                         | 508     |
| 1886..... | 508.....                   | 36.....                         | 544     |
| 1887..... | 542.....                   | 47.....                         | 589     |
| 1888..... | 562.....                   | 54.....                         | 616     |
| 1889..... | 610.....                   | 60.....                         | 670     |
| 1890..... | 634.....                   | 59.....                         | 693     |
| 1891..... | 646.....                   | 56.....                         | 702     |
| 1892....  | 678.....                   | 61.....                         | 739     |
| 1893..... | 704.....                   | 75.....                         | 779     |

# HOUSE SERVICE INSPECTION

The inspection has been kept up throughout the year by 8 inspectors.

The result of this inspection was the discovery and stoppage of ~~unnecessary~~ defective fittings as enumerated below, viz

|   | 1892 | Gals.<br>per<br>hour | 1893. | Galls.<br>per<br>hour. |
|---|------|----------------------|-------|------------------------|
| <del>300</del> <del>cocks</del> out of repair | 5009 | wasting              | 13616 | 2-10 wasting 39284     |
| <del>1</del> <del>cock</del> .....            | 51   | "                    | 1220  | 22 " 420               |
| <del>1</del> <del>cock</del> .....            | 4353 | "                    | 8777  | 221 " 46282            |
| <del>1</del> <del>cock</del> .....            | 76   | "                    | 1161  | 34 " 585               |
| <del>1</del> <del>cock</del> .....            | 138  | "                    | 226   | 56 " 1545              |
| <del>1</del> <del>cock</del> .....            | 322  | "                    | 422   | 256 " 4028             |
| <del>1</del> <del>cock</del> .....            | 507  | "                    | 1157  | 154 " 4440             |
| <del>1</del> <del>cock</del> .....            | 10   | "                    | 10    | 4 " 93                 |
| <del>1</del> <del>cock</del> .....            | 624  | "                    | 14991 | 438 " 8235             |
| <del>1</del> <del>cock</del> .....            | 117  |                      | 12226 | 6100 103514            |

... of water being  
 ... about 627 gal. per hour.  
 135  
 10.  
 43.  
 4  
 1880.  
 ... water wasting per house.  
 ... though only 6 inspectors  
 or 13 in 1892, doing the same  
 service, with better result.  
 ... R. ... Court in 1893.

# COMPARISON OF METER RATES WITH RATES BASED ON ASSESSED RENTAL.

Gallons.

The total quantity of water pumped in 1893 was... 6,352,735,336

That bringing no direct revenue was :

|                              |             |
|------------------------------|-------------|
| Flooding private rinks ..... | 713,730     |
| Fires .....                  | 19,978,982  |
| Watering streets,.....       | 80,536,241  |
| Public fountains.....        | 113,939,654 |
| Harbour in 1893.....         | 14,000,000  |

Total .....

246,796,975

Balance producing revenue.....

6,105,938,361

That charged for at meter rates :

|  |             |
|--|-------------|
| Railways, including street railway.                          | 86,979,885  |
| Factories and engine.....                                    | 202,249,627 |
| Elevators, inclusive of those at<br>hotels and railways..... | 162,215,593 |
| Breweries .....  | 30,263,122  |
| Hotels .....   | 42,012,914  |
| Schools, convents and colleges .....                         | 36,291,444  |
| Hospitals and houses.....                                    | 7,374,201   |
| Churches, for organs.....                                    | 6,891,083   |
| Miscellaneous, livery stables, res-<br>taurants, &c.....     | 8,925,858   |

Total.....

687,858,406

Balance being that charged for at  
rates based on rental and special  
rates and including waste.....

5,418,079,955

The revenues from water in 1893 was \$646,146.10

That from metered water, including  
rent of meter was..... 138,747 92

Balance being revenue from rates  
based on rental and sundry spe-  
cial charges..... 507,398.18

Total water from which revenue is  
delivered, being at the rate of  
10½ cts per 1000 gals.....

6,105,938,361

From water used at mine based on  
 record, being at rate of  $3\frac{1}{2}$  cts  
 per 1000 gals.-----

5,418,073.50

From water used at better mine.  
 being at rate of  $3\frac{1}{2}$  cts per  
 1000 gals.-----

687,858.00

It shows that the rent received per 1000 gallons, by meter rental,  
 is more than double that of meter based on assessed rental.

Your obedient servant,

Signed

J. O. ALFRED LAFORST.

Atty. Genl. M. W. W.

## LOW LEVEL PUMPING STATION.

Jan. 15th 1894.

A. DAVIS, Esq.,

*Superintendent of Water Works.*

DEAR SIR,

My report for the year ending December 31st 1893 is herewith respectfully submitted.

## No. 1 WHEEL HOUSE.

Only a section of the repairs, recommended in my last year report was carried out, which consists in the patching of the wooden sheeting of the walls and floor and the renewing of some of the stairs. Temporary upright posts had to be placed under the floor sills in order to keep them from giving away. All other repairs recommended remains yet unfinished. The interior of the building presents a very neglected appearance, the paint being worn off in many places. In consequence of the roof not having been painted, the sheet iron covering has been eaten through in many places and requires to be renewed or considerably repaired.

## Nos. 2, 3 AND 4 WHEEL HOUSE.

This building is in the same condition as when last reported upon. The repairs recommended should be carried out as its appearance is anything but favorable looking.

## THE MACHINE SHOP.

The only repairs done to this building was the renewing of the wooden stairs, all other necessary repairs reported last year should be accomplished.

## No. 1 ENGINE HOUSE.

A window was broken through the basement wall at the north east corner of this building, and a glass door substituted for the bottom door in the center of north side, by this means we are enabled to move about without the aid of artificial lights in the day time. In order to accomplish the above work, together with the removal of the stone foundation, to a depth that would allow of a brick foundation peculiar to the requirement of the new



Washington engine. It was found necessary to place steam coils in the basement in order to keep the pipes connected with No 1 engine from freezing as owing to the severe weather during the months of November and December they were frozen several times necessitating the strictest vigilance.

The 30" delivery pipe of the new engine having to pass through the room immediately next to an office it leaves this room no longer serviceable for this purpose. At present we are using the weigh house situated at the large scales as an office.

An opening was made in the south side of this building, to furnish space for the 30" suction pipe from the tank to the new engine, and a portion of the basement platform repaired in order to retain the engine room floor in position while the stone foundation of the old Gilbert engine was being removed, the whole flooring had to be raised in position by means of upright posts. The repairs done to the stone roof does not prevent the rain from making its way through consequently a new roof will be necessary. The series of cupboards placed in the work, store and oil rooms, the oil cabinet and steam coils were much required improvements and will enable us to acquire systematic order in the keeping of our tools and stores. That portion of the repairs called for last year that remain undone will require completion this year.

### NO. 3 ENGINE HOUSE.

The repairing to this building consisted in removing that portion of the chimney above the roof. The other repairs called for, should be done this year.

### THE BOILER HOUSES.

The repairs to the boiler houses were the renewing of the broken and sealed tubes. All the repairs recommended last year are urgently required and should be carried out this year.

The wooden tramway was repaired, that is to say the portion of it which fell down.

### THE COAL SHED.

None of the repairs asked in my last report were carried out. Fire broke out several times in the coal during the months of November and December, necessitating the removal of a large quantity of the coal stored in the shed, and for this purpose we were obliged to pull down the whole sheeting of the south side, to allow the gas and smoke to escape while the men were removing the coal. You had this side replaced in panels, so that in future under similar circumstances, opening may be effected with facility.

## THE DWELLINGS.

The buildings are in the same condition as when last reported upon. If they were the property of a private individual he would be prosecuted for their unsanitary condition. The repairs stipulated before are very necessary and should be carried out this year.

## BRASS FOUNDRY.

This building is in fairly good condition but still requiring the repairs previously asked for

## THE GROUNDS.

The repairs recommended in my last report were not carried out. However we have succeeded in keeping the grounds in fairly good order. That portion of the settling basin bank between the engine and boiler houses has been uprooted for the laying of 3" suction pipes and controlling valves of the suction mains to the new engine.

There were five valves placed, one between the tank and settling basin, one on the old suction pipe of No. 1 engine, one on the suction pipe of No. 3 engine, one on the pipe that connects No. 3 engine suction with the tank, two on the proposed new suction, that is to connect with the aqueduct above its entrance into the settling basin. Owing to this work being done during the months of November and December, the filling in of the cuts could not be properly done, and, as a consequence, considerable work will have to be done to them in the spring, to place this portion of the grounds in their former condition.

The work recommended in last years report should be carried out this year, particularly the covering of No. 2 wheel race, which is not safe.

## No. 1 TURBINE WHEEL.

Only minor repairs were done to this wheel. New ball air cocks were placed on the valve chests, their drip pipes being connected with one common discharge. Large galvanized pans have been placed under the valve chests, which trap leakage water and conducting it to where it is discharged into the wheel pit.

The wheel at time of writing is in good order not likely to require many repairs during the year. It should be furnished with a new revolution counter of the type of the one attached to No. 1 Engine which give good satisfaction.

## No. 2 OR OLD BREAST WHEEL.

This wheel is being removed at time of writing.

## No. 3 WHEEL.

This wheel is in the same condition as when last reported upon. The pumps work loosely from their holding down girder and are held in position by various contrivances. They are 38 years old and very much worn, they should be renewed and replaced by the modern machinery used for such work.

## No. 4 WHEEL.

This wheel is very much in need of heavy repairs. The pistons are much worn and probably should be renewed. The pump rods should be skinned, new neck bushes fitted in the stuffing boxes and the glands rebushed and otherwise repaired ; but I am opinion that it should be wise to carry my suggestion of last year which when done would leave a new pump.

## No. 1 ENGINE.

The repairs to this engine were slight consisting in the making of two of the high pressure cylinder head joints, making two of the main steam pipe joints taking up the lost motion on some of the parts, replacing nine pump valve springs which were found broken and renewing some of the cylinder drain pipes, also some repairs to the wooden lagging and skinning up of the pistons rods of the independent air pump vale springs. When the new engine is in reliable running order the engine should be overhauled to ascertain the condition of its internal working parts and with all its connection should be painted.

## No. 3 ENGINE.

This engine is in fairly good order, it may however be found necessary to renew some of the cylinder and jacket pipes, to take up all the lost motion on all the working parts, to reface all the pump rubber valves and thoroughly overhaul the boiler feed pump and probably furnish it with new plungers, as there is reason to believe that there is considerable of a by-pass. The pistons should be examined and the rings set up, and the whole should be painted.

## No. 1 BATTERY BOILERS.

This battery worked well during the year and at time of

writing are in good order. They were inspected and tested by Mr. E. O. Champagne, the City Boiler Inspector, on the 6th of June and pronounced by him to be in good condition, I did not receive his certificate. Two sections of the 2 feed pipe in front of the boiler split, they were removed and replaced. One of the check valves on the feed pipe gave trouble, it was removed and replaced by a new one. The brick furnaces were frequently rebuilt, this work is done by the firemen. They passed the year without new grate bar, but a new set will be required at an early date. The glass faces of the steam gauges are and have always been of the ordinary common window glass and break frequently, a better quality of glass will remove this trouble. The front and pipe connection should be painted and a set of tube cleaner will be necessary.

### No. 2 BATTERY OF BOILERS.

This battery was called into requisition in February, March and April owing to the heavy consumption of water during these months, which made necessary the continuous working of both engines, and on some occasions above their rated capacity in order to keep up the supply, they were used to furnish steam to No. 3 engine while No. 3 battery was being cleaned, some slight repairs were done to the feed pipes, brass mountings and steam pipes. They were tested by the City Boiler inspector on the 28th of July and declared all right. These are the boilers to be removed in order to make room for the new boilers now in course of construction.

### No. 3 BATTERY OF BOILERS.

These boilers at the time of writing are in good order, some repairs of a slight nature to the brass mountings feed and steam pipes, will be required. The boiler setting brick retaining wall at the west end of this battery is very much bulged out, it is held in position by temporary staying, it should be pulled down and rebuilt. When No. 2 battery is being removed the severing of the steam and feed water pipes connections and other parts will make necessary some changes and repairs that will be better seen during the removal than at present. A set of grate bars will be required and the front and pipe connections should be painted. These boilers were also tested on 28th July.

In conclusion, I beg to tender you my thanks for the able assistance you so cheerfully rendered me in the discharge of my duties.

The whole respectfully submitted,

I have honor to be

Your obedient servant,

D. KEARNEY,

*Engr.*

## HIGH LEVEL PUMPING STATION, McTavish Street.

January 1894.

A. DAVIS, Esq.

*Superintendent Montreal Water Works.*

SIR,

I beg to submit my annual report for the year ending December 31st, 1893, on the work done, the conditions and requirements of the McTavish and High Level pumping station.

## THE WORTHINGTON ENGINE

Is in the same condition as last year and requires some light repairs. It did no work for the past year. The consumption has increased so much that this engine cannot force water higher than the level of Pine Avenue. This engine did good work during its time. The section has got so large for the past six years that this engine is too small to be of much service to the department. Still it would be advisable to keep it until we get one of a more suitable size for the account of work to be done.

## THE GILBERT ENGINE.

This engine is working every day and has worked well throughout the year, giving no trouble other than the breaking of a stem valve in the air pump bucket and the displacing of another in the hot well. I put in two valves in the air pump bucket which I had on hand. This and other small repairs have been done at the low level work-shop. The friction pulley of the fan gear got accidentally broken and had to be replaced by another of an improved pattern. The steam and water feed valves require grinding as some of them are breaking but the engine being at work daily there is no time or chance to repair for want of a duplicate engine. I consider the High Level Station is much in need of a second engine. The joints or steam pipes gave much trouble in keeping them tight with rubber or asbestos joints. I got them all made with corrugated copper which has stood well for several months past. The wood casings on the cylinders require repairing as the wood is charred and falling off. The steam pipes require to be covered anew. The old covering is giving away and falling off. Sectional magnesia is most recommendable for that purpose. The engine and pumps require painting and varnishing.

I would recommend Blackman's patent fans for furnace blast

instead of the present ones. It would relieve the engine considerably. I renewed fifteen rubber valves and sixty-seven brass wire springs in pumps during the year.

## GILBERT BOILER

The Gilbert Boiler has been in good working condition. It worked in turn with the White Boiler during the year. It has been tested by the Inspector and stood two hundred pounds cold water pressure. The water heater connected with this boiler is worn out for the past ten years and is much against the working of the boiler as the water feed enters at a very low temperature. It requires to be renewed as soon as possible.

The boiler requires to be covered anew as the present covering is burnt and falling off. This boiler required no repairs for the past year other than the making of steam joints on the super-heater. It would be recommendable to have the smoke box or combustion chamber enlarged and the sheet iron flue to be renewed. A straight one connecting with the chimney would be preferable, as the boiler seems choked in its draught and the gas ignites on some occasions. I would also recommend a blow-off pipe from the safety valves of boiler up through the roof of the building.

## THE ' WHITE ' BOILER

This boiler worked in turn with the Gilbert during the year. It was inspected and tested to two hundred pounds cold water pressure. It required no work nor repairs done to it other than making joints on steam pipes and super-heater. It would be well to enlarge the smoke box or combustion chamber as the boiler seems choked in its draught; also change the top sheet iron flue to a straight one and do away with the bends connecting with the chimney. A blow-off pipe from safety valve of this boiler is also required.

## THE OLD ENGINE ROOM

Requires painting, oak graining and a new floor as the present one is decayed, also a new oil cloth for the same. The water closet is in very bad condition and needs to be attended to. A wash basin and stand are badly needed here. The water course around outside of this building is all broken by the frost and a new one is required.

## THE NEW ENGINE ROOM

This room requires to be newly painted the walls, ceilings and floor and a new oil cloth. Six iron girders to be laid across the

beams for lifting purposes, 18 feet long and strong enough to ~~lift~~ <sup>raise</sup> a ton weight in the centre. The place is much in need of a store room in which to place supplies.

### THE BOILER HOUSE.

This building requires a new floor of flagging or rock cement. The back walls must be repaired as soon as possible as rain and snow water is coming through it thus injuring the walls and roof considerably. One of the rafters has decayed so much in the wall, we had to support it with an upright timber from the floor. The other rafter requires supporting in the same way. The inside of this building requires white washing and a few other repairs to the roof.

### THE CHIMNEY.

A conical-shaped sheet iron lining is necessary for this chimney from the middle to the top as the one in use at present is not proportioned with the boilers and we are compelled to use a force draught all the time. This causes more coal to be burned on the same work than if we had a natural draught. Owing to the shelter from the mountain it would require a chimney 200 feet high. The present one is only 95 feet.

### COAL SHED.

The roof of this shed is leaking and requires to be caulked with oakum and pitched tarred and covered with three inch timbers. The back wall to be repaired as the surface water is coming through it.

### McTAVISH RESERVOIR.

The supply from this reservoir was continually in the city during the past year, the old portion of the centre wall needs repairing. It leaks so badly from side to side that a reserve cannot be kept in either. The masonry in back wall requires grouting and pointing with cement, also to be puddled with clay as considerable surface water is getting into the reservoir. The retaining walls want a thorough repairing as there are a great many defective joints caused by the ice sticking to the wall; it takes the cement out of them. The south side of reservoir had to go under temporary repairs last summer. There were some leaks from it into the McGill grounds. There is a leakage in the dry tunnel in front of valve house. There are several of the coping stones of the old portion crumbling away and require to be repaired.

It would be recommendable to concrete the bottom of the reservoirs, as they are at present very rough and expensive to clean out. It would also save considerable time. At present it takes a week to clean them which is a long time to keep them empty. The revetment wall requires a new covering of  $1\frac{1}{2}$  inch boards of which it will take about 400 and about 75—3 inch plank the same to be coated with tar. The wood fencing around reservoir property requires straightening and painting. The banks and slopes were kept in good order during the past summer, the weeds cleaned out and the grass cut regularly. It would be an improvement to make macadamised road on reservoir bank from the entrance on north side to coal shed as the coal carts keep the banks cut up and hard to keep in order. There is a great want of an electric light at the north side of reservoir, on Carleton Road at entrance of reservoir gate. It would be a great benefit to us as well as to the public as this corner is in total darkness.

### THE VALVE HOUSE.

The walls require pointing on the outside. The roof, doors, windows, ceilings and cornices to be painted. The flood gates in over flow passage are decayed and want renewing. We got a new water float for gauge. We want some iron brackets to stay valve rods in the well. They are temporarily fixed with wood at present.

### HIGH LEVEL RESERVOIR.

This reservoir was kept continually full for the past year on its section. The retaining walls want considerable repairs. There is a number of bad joints in the masonry and it shows leaks at the bottom of the slope. At the back and ends of reservoir there is considerable surface water getting in. The valve house wants a new door and frame as the old ones are decayed. There was a new telephone placed there last spring which is of great use. A low water gauge is much wanted there in case of a main pipe getting broken. It would give the alarm in engine house or dwelling. A small boat is required for this reservoir.

### DWELLING HOUSE.

This requires some sanitary improvements. The extension of the engine room water closet to the top of the dwelling and the water closet of dwelling placed therein would allow the pipes to be removed from one of the principal rooms of the house which they at present pass through and cause a dangerous and disagreeable smell. There were \$150 appropriated for this two years ago



been  
a to  
for

The steam heating pipes are leaking  
the windows inside and outside are  
has not been done for years  
to be painted. The galvanised  
There is some plaster

### THE TELEPHONE

to a defect in the instrument or  
very poor satisfaction for the  
has been kept, it is a useless bill of  
gave good service and satisfaction

### THE SCALES

The old ones were all  
They were inspected by the revenue  
required. The present one is  
a new cover over scales will require  
weather.  
submitted.

Yours honor to be, Sir,

Yr obedient servant,

JAMES COLEMAN

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## WATER WORKS SHOP.

January, 24th. 1894.

A. DAVIS, Esq.

*Superintendent Water Works.*

DEAR Sir,

I respectfully submit the report of the work done under my direction, during the year ending December 31st 1893.

## MAIN IMPROVEMENTS, REPAIRS, ETC.

Schedule No. 10 shows the name of the streets, the size, and length of pipes laid in each of them. Schedule No. 8a shows that one hundred and forty-nine repairs were done to the main pipes in the whole city. Most of these were caused by old age and the action of the frost which was very hard on the pipes last winter.

Thirteen valves were renewed and thirty-four valves spindles were also renewed on account of old age ; they were broken and worn out.

The main pipes in the following streets should be replaced by larger ones, and laid deeper, as they are now too small, and too shallow and exposed to the frost.

Maisonneuve, from Dorchester to Ontario streets.

Visitation, from Craig to north of Mignonne street.

Seigneurs St., from Dorchester to top of hill, about 400 feet long.

The high level pipes are connected to the low level main pipes at the following places :

St. Catherine St. west of Atwater Avenue, 6" connection.

St. Mathew St. south of Lincoln Avenue, 6" "

Guy St. south of Lincoln Avenue, 6" "

Sherbrooke St. west of Mountain St. by 6" main.

Bishop St. south of Sherbrooke St., 6" "

Crescent St. south of Sherbrooke St. 6" connection.

Peel St north of Sherbrooke St. 4" "

Drummond St. north of Sherbrooke St. 8" "

McTavish St. south of Carleton Road, 8" "

Windsor St. south of Dorchester St. by 12" "

University St. north of Sherbrooke St. 12" "

Oxenden Ave north of Prince Arthur St. 6" "

Park Ave south of Pine Ave by 8" "

|                                       |     |            |
|---------------------------------------|-----|------------|
| University St. north of Prince Arthur | 4"  | Connection |
| St. Urbain St. south of Pine Ave by   | 4"  | "          |
| St. Lawrence St. north of Roy St. by  | 10" | "          |
| Napoleon St. east of St. Lawrence by  | 4"  | "          |
| Prince Arthur and Cadieux Sts by      | 12" | "          |
| Mount Royal Ave east of Cadieux St.   | 12" | "          |
| Rachel St west of St. Denis St.       | 12" | "          |
| Amherst. and Rachel Sts.              | 12" | "          |
| Sherbrooke, west of St. Lawrence St.  | 12" | "          |

There is a valve on each of the aforesaid connections, those valves are always shut and locked, and cannot be interfered with by any body without special permission, those valves have to be opened three or four times a year to clean the water in the pipes as the water is dead at both sides of said valves.

The laying of the high level belt and fire line of 12" pipe through Sherbrooke, Amherst and St. Lawrence streets last summer was a very great improvement.

This high level line should be completed as soon as possible through Sherbrooke street, Papineau, and Rachel to Amherst street. Through Mary-Ann, Duluth Ave and Roy street from St. Urbain to Amherst street.

### HYDRANT IMPROVEMENTS, REPAIRS, Etc.

Schedule No. 8a shows that two hundred and fifty-six hydrant rods were broken. Most of the aforesaid hydrant valves were found defective on account of the freezing and heating last winter, bad usage from inexperienced men, and the contraction by frost caused the breakage of the aforesaid 36 hydrant rods.

One thousand one hundred and sixty-nine hydrants were reported frozen (1169. Seven thousand seven hundred and six-two times last winter. This was the hardest winter we had for the last sixteen years; there was no snow protection and the ground was found frozen eight feet deep in many streets.

However, I hope that the improvements made on your new hydrants will save them from frost in future. Twenty eight of your improved hydrants were put in.

I am happy to say that all the hydrants were found in good order at all the fires that occurred last winter. This shows that the inspection was needed.

New hydrants are wanted in the following streets.

|                       |         |
|-----------------------|---------|
| Mackay and Sherbrooke | streets |
| Bishop and Burnside   | "       |
| Crescent and Burnside | "       |

|                             |         |
|-----------------------------|---------|
| Sherbrooke and Crescent     | streets |
| Seminary and McCord         | "       |
| Victoria and St-Catherine   | "       |
| St-George and Lagauchetière | "       |
| St-Hubert and St-Louis      | "       |
| Perthus and Lacroix         | "       |
| Robillard and Moreau        | "       |
| Opposite 241 St-Charles     | street  |
| " 65 St-Charles             | "       |
| " 192 Bourgeois             | "       |
| " 82 Panet                  | "       |
| " 137 Mansfield             | "       |
| " 129 Lusignan              | "       |
| " 46 Versailles             | "       |
| " 157 Young                 | "       |
| " 183 St-Urbain             | "       |
| " 12 Bonsecours             | "       |

Church street between Ontario and Sherbrooke streets.

St-Charles Borromée street at Mantha's Mill.

St-Ann's Cotton Mills Notre-Dame street.

**J** Schedule No. 8 show the number of hydrants put in during year 893; also the number of patent hydrants in position up to **J** anuary 1894.

### REPAIRS TO SERVICES Etc.

Schedule No. 8 shows the number of leaks found and repaired on the service pipes; the number of service boxes changed; the number of pipes found frozen in the street &c.

All the service pipes in Mignonne street from Papineau av. to Beaudry street should be dug and laid lower.

The services on Papineau av. from Mignonne to Lafontaine street are also too shallow. The frost in these streets was found five feet and a half deep.

### PUBLIC FOUNTAINS Etc.

The ordinary repairs were done to the fountains, drinking troughs, &c.

The trough and drinking tap now at the corner of Guilbault and St-Lawrence street must be removed, and it could be placed opposite the Hotel-Dieu wall on St-Urbain street.

The fountains should be all painted early in the spring. They have not been painted for the last two years.

The show fountain in St-Patrick Square should be removed and could be put in Dufferin Square as it will never be any use where it now stands.

Permit me to thank you in my name, also in the name of all the employees of the Water Department under my supervision, for the valuable advice and the impartial manner you treated us all.

Most respectfully submitted,

Your Obedient Servant,

CHAS. LAGACE,

*Foreman* ~~\_\_\_\_\_~~

| MONTHS.         | Pumping<br>time. | Revolutions. | Gallons<br>pumped. | Average pressure<br>in air vessel. | Castor<br>oil. | Tallow. | Coal oil.  | Waste. | Coal for<br>fuel. |
|-----------------|------------------|--------------|--------------------|------------------------------------|----------------|---------|------------|--------|-------------------|
| 1893.           | Hrs. M.          |              |                    |                                    |                |         | In Pounds. |        |                   |
| January .....   | 740.00           | 590,572      | 137,603,276        | .....                              | 207.00         | .....   | 155.00     | 25.56  | 103,530           |
| February .....  | 554.55           | 262,351      | 65,787,783         | .....                              | 105.75         | .....   | 127.00     | 24.50  | 92,350            |
| March .....     | 196.15           | 137,208      | 31,969,464         | .....                              | 36.00          | .....   | 118.00     | 14.37  | 94,050            |
| April .....     | 717.10           | 587,329      | 136,847,657        | .....                              | 135.00         | 36      | 138.00     | 23.31  | 77,380            |
| May ..          | 744.00           | 631,389      | 147,113,637        | .....                              | 139.50         | .....   | 134.00     | 21.50  | 17,060            |
| June .....      | 720.00           | 610,781      | 142,311,973        | .....                              | 135.00         | 40      | 120.00     | 27.87  | .....             |
| July .....      | 740.00           | 616,129      | 143,558,057        | .....                              | 139.50         | .....   | 124.00     | 27.18  | .....             |
| August .....    | 744.00           | 611,576      | 142,497,208        | .....                              | 139.50         | 40      | 130.00     | 23.87  | .....             |
| September ..... | 720.00           | 577,641      | 134,590,353        | .....                              | 135.00         | .....   | 135.00     | 23.75  | .....             |
| October .....   | 744.00           | 589,226      | 137,289,658        | .....                              | 139.50         | 38      | 143.00     | 24.18  | .....             |
| November .....  | 653.05           | 505,892      | 117,872,836        | .....                              | 130.50         | .....   | 152.00     | 27.25  | 26,109            |
| December.....   | 740.00           | 567,402      | 132,204,666        | .....                              | 139.50         | .....   | 155.00     | 25.75  | 104,620           |
| Total .....     | 8013.25          | 6,307,496    | 1,469,646,568      | .....                              | 1,581.75       | 154     | 1,631.00   | 289.09 | 515,090           |
| Last year ..    | 7418.05          | 6,307,575    | 1,469,664,975      | 76                                 | 2,225.25       | 120     | 1,541.00   | 259.85 | 494,940           |

SCHEDULE No 2--SHOWING THE WORK OF THE BREAST WHEEL No. 2 AND TURBINES Nos 3 and 4.

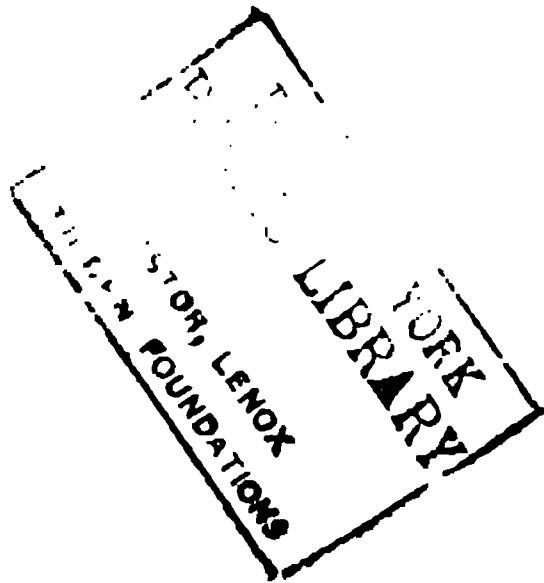
| Month     | Tide of day | Feet of water | Gallons pumped     |                |                | In pounds.    |                |                | Castor Oil | Waste |
|-----------|-------------|---------------|--------------------|----------------|----------------|---------------|----------------|----------------|------------|-------|
|           |             |               | Breast wheel No. 2 | Turbine No. 3. | Turbine No. 4. | Total         | Gallons pumped | Gallons pumped |            |       |
| Jan. 1911 | 2           | 82.00         | 888,401            | 14,283,408     | 76,402,486     | 88,685,894    | 112.50         | 104            | 24.00      |       |
| Feb'y     | 2           | 82.00         | 173,050            | .....          | .....          | 14,059,700    | 56.00          | 72             | 12.37      |       |
| March     | 5 1/2       | 81.84         | 197,599            | 63,913,652     | 70,687,514     | 143,601,166   | 24.75          | 130            | 25.81      |       |
| April     | 7 1/4       | 84.97         | 1,011,926          | 88,056,546     | 87,120,236     | 175,176,782   | 171.00         | 145            | 23.56      |       |
| May       | 7 1/2       | 87.50         | 193,234            | 84,731,132     | 85,418,124     | 170,149,256   | 180.00         | 120            | 22.87      |       |
| June      | 7 1/4       | 86.88         | 1,047,176          | 83,308,804     | 89,147,136     | 172,555,040   | 168.75         | 134            | .....      |       |
| July      | 7 1/4       | 87.47         | 1,077,050          | 85,179,711     | 88,726,000     | 173,905,041   | 173.50         | 130            | 30.00      |       |
| August    | 7 1/2       | 84.75         | 947,712            | 81,364,036     | 83,223,232     | 164,587,288   | 168.75         | 135            | 26.87      |       |
| Sept.     | 7 1/4       | 82.59         | 849,591            | 78,400,052     | 81,094,060     | 160,074,718   | 173.25         | 144            | 25.64      |       |
| October   | 6 1/2       | 84.80         | 801,729            | 87,819,844     | 89,206,060     | 177,817,633   | 164.25         | 163            | 30.00      |       |
| Nov.      | 6 1/2       | 84.02         | 438,000            | 64,281,104     | 59,009,000     | 123,571,104   | 140.25         | 118            | 13.11      |       |
| Dec.      | 6 1/2       | 84.00         | 1,110,000          | 100,000,000    | 781,803,400    | 1,491,803,400 | 1,800.75       | 1,070,000      | 47         |       |
| Total     | 62 1/2      | 82.01         | 10,110,000         | 1,000,000,000  | 1,000,000,000  | 2,000,000,000 | 2,000.00       | 1,000,000      | 1,000.00   |       |

| MONTHS.      | Pumping time. | Revolutions. | Gallons pumped. | COAL USED IN POUNDS. |              |                  | To raise 1,000 gallons. | Average pressure in air vessel. | IN POUNDS. |           |             |               |           | Cotton waste. |  |
|--------------|---------------|--------------|-----------------|----------------------|--------------|------------------|-------------------------|---------------------------------|------------|-----------|-------------|---------------|-----------|---------------|--|
|              | Hrs. M        |              |                 | For pumping.         | For banking. | Cylinder grease. |                         |                                 | Valvoline. | Seal oil. | Castor oil. | Cylinder oil. | Coal oil. |               |  |
| 1893.        |               |              |                 |                      |              |                  |                         |                                 |            |           |             |               |           |               |  |
| January ..   | 163. 15       | 134,341      | 73,887,550      | 237,610              | 40,020       | 3,757            | .....                   | .....                           | 45         | 8.87      | 15.75       | .....         | 48        | 11.75         |  |
| February. .  | 666. 45       | 532,966      | 293,131,300     | 975,360              | .....        | 3,327            | .....                   | .....                           | 202        | 71.00     | 65.25       | 31            | 224       | 22.75         |  |
| March ....   | 744. 00       | 569,808      | 313,394,400     | 1,021,110            | .....        | 3,257            | .....                   | .....                           | .....      | 79.87     | 69.75       | 248           | 256       | 23.56         |  |
| April ..     | 532. 10       | 356,767      | 196,921,850     | 661,150              | 6,060        | 3,400            | .....                   | .....                           | .....      | 35.50     | 54.00       | 176           | 100       | 30.63         |  |
| May .....    | 529. 15       | 361,126      | 198,619,300     | 707,170              | 6,300        | 3,592            | .....                   | .....                           | 240        | 44.37     | 67.50       | 32            | 168       | 15.00         |  |
| June ..      | 383. 50       | 278,924      | 153,408,200     | 536,940              | 3,850        | 3,525            | .....                   | .....                           | 180        | 35.50     | 40.50       | .....         | 128       | 15.00         |  |
| July .....   | 416. 00       | 305,816      | 168,198,800     | 550,390              | 10,180       | 3,332            | .....                   | .....                           | 120        | 35.50     | 54.00       | 40            | 136       | 20.00         |  |
| August ....  | 662. 45       | 493,447      | 271,395,850     | 879,690              | 7,380        | 3,268            | .....                   | .....                           | 330        | 71.00     | 63.00       | .....         | 240       | 20.43         |  |
| September .  | 520. 05       | 372,652      | 204,958,600     | 705,560              | 8,020        | 3,481            | .....                   | .....                           | 240        | 44.37     | 54.00       | .....         | 192       | 15.31         |  |
| October .... | 584. 20       | 449,064      | 246,985,200     | 865,010              | 9,150        | 3,539            | .....                   | .....                           | 360        | 71.00     | 58.50       | .....         | 208       | 22.87         |  |
| November ..  | 534. 35       | 397,578      | 218,667,900     | 884,330              | 7,610        | 4,078            | .....                   | .....                           | 262        | 71.00     | 50.25       | .....         | 232       | 27.93         |  |
| December...  | 504. 30       | 371,796      | 204,487,800     | 751,400              | 3,360        | 3,691            | .....                   | .....                           | 195        | 71.00     | 51.75       | .....         | 224       | 15.75         |  |
| Total...     | 6241. 30      | 4,624,285    | 2,543,356,750   | 8,775,740            | 101,930      | 3,493            | .....                   | .....                           | 2174       | 638.98    | 650.25      | 526           | 2256      | 240.93        |  |
| Last year    | 2725. 30      | 2,229,539    | 1,204,246,450   | 3,932,160            | 251,510      | 3,476            | 75                      | 10                              | 68         | 336.40    | 420.12      | 752           | 792       | 181.42        |  |



SCHEDULE No 4—SHOWING THE WORK OF STEAM ENGINE, No. 3.

| MONTHS    | HOURS    | Fuel consumed | Horse power | COAL USED IN POUNDS. |              |                             |                                   | IN POUNDS.    |           |           |             |                  |            |       | Cotton waste. |       |       |       |       |    |    |
|-----------|----------|---------------|-------------|----------------------|--------------|-----------------------------|-----------------------------------|---------------|-----------|-----------|-------------|------------------|------------|-------|---------------|-------|-------|-------|-------|----|----|
|           |          |               |             | For pumping          | For banking. | To raise 1,000,000 gallons. | Average pressure on pump pistons. | Cylinder oil. | Seal oil. | Coal oil. | Castor oil. | Cylinder grease. | Valvoline. |       |               |       |       |       |       |    |    |
| Jan.      | 13.0     | 17,325        | 30,326,100  | 1,82,120             | 4,260        | 5,750                       | 71.00                             | 216           | 54.00     | 172       | 0           | 31.50            | 180.0      | 21.11 | 252           | 0     | 22.62 | 97.50 | 10.25 | 5  | 24 |
| February  | 13.0     | 2,851         | 30,756,66   | 736,380              | 32,930       | 5,884                       | 53.25                             | 130           | 45.00     | 180.0     | 0           | 21.11            | 252        | 0     | 22.62         | 97.50 | 10.25 | 5     | 24    | 5  | 24 |
| March     | 675.50   | 44,052        | 194,903,22  | 1,115,010            | 7,100        | 5,757                       | 71.00                             | 232           | 69.75     | 252       | 0           | 22.62            | 97.50      | 10.25 | 5             | 24    | 5     | 24    | 5     | 24 |    |
| April     | 195.55   | 139,081       | 60,631,359  | 342,600              | 14,900       | 5,895                       | 17.75                             | 48            | 22.50     | 97.50     | 10.25       | 5                | 24         | 5     | 24            | 5     | 24    | 5     | 24    | 5  | 24 |
| May       | 260.30   | 148,459       | 61,728,24   | 379,300              | 6,330        | 5,649                       | 8.87                              | 56            | 20.25     | 6         | 29          | 11.31            | 75         | 00    | 12.00         | 5     | 24    | 5     | 24    | 5  | 24 |
| June      | 203.56   | 175,171       | 68,090,550  | 385,820              | 1,800        | 5,693                       | 17.75                             | 64            | 18.00     | 75        | 00          | 12.00            | 5          | 24    | 5             | 24    | 5     | 24    | 5     | 24 |    |
| July      | 107.25   | 81,761        | 35,617,796  | 194,880              | 8,698        | 5,710                       | 40                                | 9.00          | 52.50     | 52.50     | 8.00        | 5                | 24         | 5     | 24            | 5     | 24    | 5     | 24    | 5  | 24 |
| August    | 79.05    | 48,703        | 21,234,508  | 148,670              | 10,110       | 7,477                       | 17.75                             | 40            | 9.00      | 45.00     | 12.00       | 5                | 24         | 5     | 24            | 5     | 24    | 5     | 24    | 5  | 24 |
| September | 204.50   | 17,278        | 64,213,208  | 374,030              | 8,050        | 5,950                       | 26.03                             | 01            | 18.00     | 75.00     | 14.50       | 5                | 24         | 5     | 24            | 5     | 24    | 5     | 24    | 5  | 24 |
| Total     | 2,676.10 | 1,941,571     | 846,524,956 | 4,838,810            | 94,178       | 5,827                       | 284.00                            | 880           | 265.50    | 1077.50   | 143.29      | 5                | 24         | 5     | 24            | 5     | 24    | 5     | 24    | 5  | 24 |
| Less year | 1,633.40 | 1,255,345     | 547,330,420 | 2,841,010            | 211,192      | 5,000                       | 303                               | 204.41        | 480       | 161.40    | 21          | 382.50           | 140.90     | 5     | 24            | 5     | 24    | 5     | 24    | 5  | 24 |



|               |               |             |             |             |           |           |           |            |       |
|---------------|---------------|-------------|-------------|-------------|-----------|-----------|-----------|------------|-------|
| TOTAL 1897... | 1,908,000,370 | 000,120,220 | 115,000,000 | 000,000,000 | 1,499,535 | 0,678,539 | 4,708,840 | 14,477,384 | ..... |
| Daily Aver..  | 4,020,480     | 1,054,049   | 2,125,983   | 2,466,546   | 3,299,305 | 1,499,535 | 0,678,539 | 4,708,840  | ..... |



SCHEDULE No. 5—SHOWING TOTAL PUMPING AT LOW LEVEL PUMPING STATION.

| MONTHS.                          | BY WATER POWER. |                 |                 |                 | BY STEAM POWER.  |                  |               |               | TOTAL FOR EACH MONTH         |     | Percent-<br>age. |           | Av level<br>of water. |
|----------------------------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|---------------|---------------|------------------------------|-----|------------------|-----------|-----------------------|
|                                  | Wheel<br>No. 1. | Wheel<br>No. 2. | Wheel<br>No. 3. | Wheel<br>No. 4. | Engine<br>No. 1. | Engine<br>No. 2. | By water.     |               | By water<br>and<br>by steam. |     | By water.        | By steam. |                       |
|                                  |                 |                 |                 |                 |                  |                  |               |               |                              |     |                  |           |                       |
| 1893                             |                 |                 |                 |                 |                  |                  |               |               |                              |     |                  |           |                       |
| January                          | 137,603,770     | ...             | 12,283,408      | 70,402,486      | 73,887,550       | 206,320,100      | 228,983,170   | 280,213,650   | 508,502,820                  | 44  | 68.55            | 32.55     | 05.96.00              |
| February                         | 05,787,783      | ...             | ...             | ...             | 203,131,300      | 130,735,036      | 66,787,783    | 423,856,386   | 489,664,119                  | 13  | 44.38            | 55.62     | 92.34.00              |
| March                            | 31,989,464      | ...             | ...             | 14,050,700      | 313,304,400      | 194,810,312      | 46,929,164    | 508,304,712   | 553,283,876                  | 6   | 46.01            | 53.99     | 95.35.97              |
| April                            | 170,647,657     | ...             | 63,915,652      | 79,897,614      | 128,231,860      | 60,630,310       | 280,448,822   | 366,861,160   | 637,300,060                  | 52  | 20.47            | 79.53     | 00.36.00              |
| May                              | 147,113,637     | ...             | 88,068,398      | 87,120,230      | 106,610,300      | ...              | 322,390,409   | 108,619,304   | 520,909,769                  | 61  | 66.39            | 33.61     | 12.41.53.36.98        |
| June                             | 142,311,973     | ...             | 54,731,332      | 85,418,124      | 153,408,200      | 64,728,124       | 312,461,429   | 218,136,324   | 530,597,753                  | 53  | 59.41            | 40.59     | 07.38.99              |
| July                             | 143,536,037     | ...             | 83,308,904      | 87,197,130      | 108,108,600      | 65,090,568       | 316,064,097   | 338,983,358   | 552,353,453                  | 57  | 23.42            | 76.58     | 44.36.95              |
| August                           | 142,497,908     | ...             | 86,170,744      | 86,320,340      | 271,335,850      | ...              | 315,984,252   | 271,305,850   | 587,301,103                  | 63  | 80.46            | 19.54     | 20.38.56.20.83        |
| September                        | 134,590,353     | ...             | 91,364,036      | 83,223,232      | 264,938,000      | 36,647,798       | 299,177,631   | 240,606,396   | 539,784,017                  | 56  | 43.44            | 56.56     | 34.32.78              |
| October                          | 137,289,659     | ...             | 76,380,653      | 81,694,166      | 346,965,300      | ...              | 297,364,376   | 246,065,300   | 544,349,676                  | 54  | 62.43            | 37.57     | 83.36.34              |
| November                         | 117,872,836     | ...             | 07,310,644      | 69,306,696      | 213,667,900      | 21,214,006       | 264,390,376   | 239,902,406   | 494,292,784                  | 61  | 46.46            | 53.54     | 57.62.36.09           |
| December                         | 182,204,666     | ...             | 04,383,404      | 29,068,000      | 304,457,600      | 04,213,306       | 225,656,070   | 268,701,006   | 494,357,078                  | 45  | 04.54            | 95.46     | 30.37.34.30.00        |
| Total<br>Daily Aver<br>365 days. | 1,469,640,568   | ...             | 706,903,572     | 764,303,408     | 2,342,356,750    | 846,524,956      | 2,962,863,630 | 3,889,881,700 | 6,852,733,380                | 40  | 64.68            | 35.32     | ...                   |
| Total 1892<br>Daily Aver         | 1,469,644,976   | 394,728,220     | 775,983,832     | 900,290,549     | 1,204,246,450    | 547,330,420      | 3,332,686,863 | 1,761,574,870 | 5,094,261,733                | 87  | 42.32            | 57.68     | 20.03.36.40           |
|                                  | 4,026,429       | 1,054,049       | 2,125,983       | 2,466,546       | 3,290,300        | 1,409,535        | 8,078,539     | 4,798,840     | 12,877,379                   | ... | ...              | ...       | ...                   |

SCHEDULE No. 6 —SHOWING THE WORK OF ENGINE No. 2. (THE CURRENT) AT HIGH LEVEL PUMPING STATION.

| MONTHS.          | Pumping time<br>Hrs M | Horse power. | Cubic feet pumped. | Average pressure in air vessel | COAL USED IN POUNDS. |                    |                               |              | IN POUNDS.    |            |               |           |
|------------------|-----------------------|--------------|--------------------|--------------------------------|----------------------|--------------------|-------------------------------|--------------|---------------|------------|---------------|-----------|
|                  |                       |              |                    |                                | For pumping.         | For banking fires. | To raise<br>1,000,000 gallons | For heating. | Cylinder oil. | Valvoline. | Cotton waste. | Coal oil. |
|                  |                       |              |                    |                                |                      |                    |                               |              |               |            |               |           |
| January .....    | 207 30                | 607 50       | 3,111,433          | 110                            | 99,693               | 12,400             | 4,618                         | 3,481        | 95.00         | .....      | 20.00         | .....     |
| February .....   | 79 30                 | 453          | 2,072,111          | 110                            | 89,358               | 11,400             | 4,804                         | 3,037        | .....         | 85         | 27.00         | .....     |
| March .....      | 97 30                 | 482 25       | 2,328,782          | 110                            | 93,090               | 12,400             | 4,539                         | 1,146        | 174.50        | .....      | 50.00         | .....     |
| April .....      | 39 30                 | 478 25       | 1,022,48           | 110                            | 95,486               | 12,000             | 4,668                         | .....        | 154.00        | .....      | 48.75         | .....     |
| May .....        | 231 30                | 602 25       | 27,730,43          | 110                            | 114,318              | 12,400             | 4,680                         | .....        | 208.00        | .....      | 35.00         | .....     |
| June .....       | 244 00                | 612 60       | 29,018,29          | 110                            | 108,715              | 12,000             | 4,090                         | .....        | 196.00        | .....      | 35.00         | .....     |
| July .....       | 222 45                | 530 57       | 28,156,035         | 110                            | 99,080               | 12,400             | 3,917                         | .....        | 168.70        | .....      | 25.00         | .....     |
| August .....     | 244 10                | 648 25       | 31,214,415         | 110                            | 127,396              | 16,800             | 4,619                         | .....        | 162.00        | .....      | 25.00         | .....     |
| September .....  | 240 30                | 651 70       | 31,384,340         | 110                            | 142,565              | 18,000             | 5,116                         | .....        | 152.50        | .....      | 30.00         | .....     |
| October .....    | 256 15                | 762 384      | 33,820,493         | 110                            | 151,452              | 18,600             | 5,025                         | .....        | 161.50        | .....      | 33.00         | .....     |
| November .....   | 232 30                | 646 122      | 31,111,420         | 110                            | 113,809              | 18,000             | 4,236                         | .....        | 153.00        | .....      | 30.00         | .....     |
| December .....   | 238 30                | 655 398      | 31,558,072         | 110                            | 113,899              | 18,600             | 4,198                         | 2,574        | 151.00        | .....      | 32.00         | 4.00      |
| Total .....      | 2098 10               | 6,966,968    | 335,465,482        | 110                            | 1,348,861            | 175,000            | 4,542                         | 10,238       | 1,799.00      | 85         | 385.75        | 4.00      |
| Last year .....  | 2139 15               | 5,112,757    | 246,190,399        | 109                            | 879,477              | 158,800            | 4,217                         | 9,681        | 1,234.25      | .....      | 257.00        | .....     |
| Increase in 1893 | 559 25                | 1,854,211    | 89,276,083         | .....                          | 469,384              | 16,200             | 325                           | 557          | 564.75        | 85         | 128.75        | 4.00      |

**SCHEDULE No. 7.—SHOWING THE AVERAGE DEPTH OF WATER,  
THE RAIN FALL AND TEMPERATURE AT 9 A. M.  
AT McTAVISH STREET RESERVOIR.**

| MONTHS.<br><br>1893. | Average monthly<br>depth of water<br>in reservoir | RAIN GAUGES, IN INCHES. |        |                          |             | Average temperature<br>at 9 a. m. |
|----------------------|---|-------------------------|--------|--------------------------|-------------|-----------------------------------|
|                      |   | Rain.                   | Snow.  | Snow reduced<br>to rain. | Total rain. |                                   |
|                      | Feet.   |                         |        |                          |             |                                   |
| January .....        | 21.55   | 0.51                    | 15.50  | 1.84                     | 2.35        | 6.00                              |
| February .....       | 22.20   | 0.16                    | 20.75  | 2.24                     | 2.40        | 11.14                             |
| March .....          | 22.27   | 0.28                    | 5.75   | 0.64                     | 0.92        | 24.58                             |
| April .....          | 21.95   | 0.93                    | 7.50   | 0.72                     | 1.65        | 37.10                             |
| May .....            | 22.49   | 3.46                    | .....  | .....                    | 3.46        | 56.87                             |
| June .....           | 22.82   | 4.35                    | .....  | .....                    | 4.35        | 68.00                             |
| July .....           | 20.53   | 3.74                    | .....  | .....                    | 3.74        | 68.00                             |
| August .....         | 21.87   | 10.20                   | .....  | .....                    | 10.20       | 69.19                             |
| September .....      | 22.11   | 2.31                    | .....  | .....                    | 2.31        | 58.80                             |
| October .....        | 21.98   | 1.81                    | .....  | .....                    | 1.81        | 53.26                             |
| November .....       | 21.28   | 1.62                    | 2.00   | 0.29                     | 1.91        | 37.40                             |
| December .....       | 22.32   | 0.22                    | 14.75  | 4.39                     | 4.61        | 14.00                             |
| Total .....          | 21.95   | 29.59                   | 96.25  | 10.12                    | 39.71       | 42.03                             |
| Last year....        | 21.98   | 21.24                   | 113.50 | 11.41                    | 36.65       | 40.00                             |

SCHEDULE NO. 3—REPAIRS TO MAINS, HYDRANTS AND VALVES  
DURING THE YEAR 1893.

| DESCRIPTION            | 30" | 24" | 20" | 16" | 12" | 10" | 8" | 6" | 4" | Hydrant<br>valves<br>renewed | Hydrant<br>rods<br>broken. |
|------------------------|-----|-----|-----|-----|-----|-----|----|----|----|------------------------------|----------------------------|
| Main pipe broken       | 1   | 1   |     | 1   | 5   | 3   |    | 8  | 35 |                              |                            |
| Joints blow out        | 1   | 1   | 1   |     | 15  | 10  | 1  | 20 | 46 |                              |                            |
| Stop-valves renewed    |     |     |     |     |     |     | 2  | 6  | 5  |                              |                            |
| Valve spindles renewed |     |     |     |     | 1   | 1   | 3  | 9  | 31 | 256                          | 36                         |

REPAIRS &c. TO SERVICES.

| Leaking<br>water<br>drains | Couplings<br>leaking | Leak<br>in wall | Ground<br>corks<br>renewed | Wooden<br>boxes re-<br>placed by<br>iron ones | Wooden<br>boxes renew-<br>ed where<br>new foot-<br>paths laid. | Old kind<br>cockreplac'd<br>by pneumo-<br>tic valves. | Tubes<br>changed fr.<br>inside cellar<br>to outside in<br>street. |
|----------------------------|----------------------|-----------------|----------------------------|---|--|---|---|
| 2                          | 2                    | 11              | 22                         | 130   | 3063   | 11  | 955   |

| Services<br>checked | Frozen<br>outside. | Frozen<br>inside | Frozen<br>in wall | Leaks on<br>services fr.<br>various cau-<br>ses unde-<br>fined. | Air cocks<br>replaced by<br>ground<br>cocks. |
|---------------------|--------------------|------------------|-------------------|---|--|
|                     |                    |                  |                   | 511   | 152  |

|              |     |
|--------------|-----|
| At 1893      | 113 |
| January 1894 | 695 |
| January 1894 | 71  |
| January 1894 | 7   |
| January 1894 | 544 |

FOR COMMENCING JANUARY 1893,  
NEW YORK

| Total. | Total number<br>of hydrants |
|--------|-----------------------------|
| 1762   | 1169                        |

JOHN FALLON,  
Foreman at Shop





**SCHEDULE No 3**

| DESCRIPTION            |  | SERVICES CHOKED. |  | LEAKING OVER DRAINS. |  | COUPLINGS LEAKING. |  |
|------------------------|--|------------------|--|----------------------|--|--------------------|--|
| Main pipes broken      |  | Services choked. |  | Leaking over drains. |  | Couplings leaking. |  |
| Joints blown out       |  | Frozen outside.  |  |                      |  |                    |  |
| Stop-valves renewed    |  |                  |  |                      |  |                    |  |
| Valve spindles renewed |  |                  |  |                      |  |                    |  |
| Well full of water.    |  |                  |  |                      |  |                    |  |
| Rod broken by frost.   |  |                  |  |                      |  |                    |  |
| To prevent freezing.   |  |                  |  |                      |  |                    |  |
| Rod broken by frost.   |  |                  |  |                      |  |                    |  |
| Old brasses worn out.  |  |                  |  |                      |  |                    |  |
| Valve worn out.        |  |                  |  |                      |  |                    |  |
| Rod broken by frost.   |  |                  |  |                      |  |                    |  |
| Joint blown out.       |  |                  |  |                      |  |                    |  |

|                                  |    |                                  |     |
|----------------------------------|----|----------------------------------|-----|
| 94                               | 60 | 94                               | 756 |
| Repaired hydrant rod             |    | Repaired hydrant rod             |     |
| Pumped water out of hydrant well |    | Pumped water out of hydrant well |     |
| Repaired hydrant rod             |    | Repaired hydrant rod             |     |
| Packed hydrant well with manure  |    | Packed hydrant well with manure  |     |
| Repaired hydrant rod             |    | Repaired hydrant rod             |     |
| Brasses renewed                  |    | Brasses renewed                  |     |
| Put new valve                    |    | Put new valve                    |     |
| Repaired hydrant rod             |    | Repaired hydrant rod             |     |
| Recaulked joint                  |    | Recaulked joint                  |     |

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| Mignonne and Parthenais.....        | Jan. | 21 | .....     | 1   | Put in new hydrant. ....             | Old hydrant split by frost.     |
| Dorchester and Windsor.....         | "    | 21 | .....     | 1   | Put new valve .....                  | Old valve worn out.             |
| Delorimier above Sherbrooke....     | "    | 23 | .....     | 1   | Put in new hydrant .....             | Old hydrant split by frost.     |
| Opp. 113 St. Louis .....            | "    | 24 | 4" .....  | ... | Recaulked joint .....                | Joint blown out.                |
| Dorchester opp. Fort .....          | "    | 25 | .....     | 1   | Put new valve and replaced rod.....  | Valve worn out, and rod brok.   |
| Corner William and Ann .....        | "    | 25 | .....     | 1   | Put new valve.....                   | Old valve worn out.             |
| Opp. 254 Iberville .....            | "    | 25 | 4" .....  | ... | Put in new piece pipe .....          | Main broken by frost.           |
| Crescent corner Dorchester.....     | "    | 26 | 4" .....  | ... | " " .....                            | Main resting on stone.          |
| Visitation opp. Delorme Place...    | "    | 27 | 6" .....  | ... | " " .....                            | Settling of drain cut.          |
| Mountain corner Dorchester.....     | "    | 27 | .....     | 1   | Repacked 12" valve .....             | Packing worn out.               |
| Olier near McCord .....             | "    | 28 | .....     | 1   | Put new valve .....                  | Old valve worn out.             |
| Dorchester and Berri.....           | "    | 30 | .....     | 1   | " .....                              | Former valve not prop. made.    |
| Dorchester and Seigneurs .....      | "    | 31 | .....     | 1   | Replaced hydrant.....                | Rod broken by frost.            |
| Dorchester at Western Hospital.     | Feb. | 1  | .....     | 1   | Put new valve.....                   | Old valve worn out.             |
| Lagauchelière and Visitation....    | "    | 4  | .....     | 1   | " .....                              | " " "                           |
| 187 St. George st.....              | "    | 4  | 4" .....  | ... | Put in new piece pipe .....          | Settling of cut, made for drain |
| Cor. Lafontaine and Maisonneuve     | "    | 4  | .....     | 1   | Put in new seat .....                | Seat of hyd't burst by frost.   |
| Cor. Laval and Rachel.....          | "    | 7  | .....     | 1   | " " hydrant.....                     | Rod broken in old one.          |
| Cor. St. Lawrence and Duluth...     | "    | 8  | .....     | 1   | Put new valve.....                   | Old valve worn out.             |
| Cor. Water and Brock .....          | "    | 8  | .....     | 1   | Thawed hydrant pipe .....            | Pipe frozen.                    |
| Cor. Visitation and Mignonne....    | "    | 11 | .....     | 1   | Took out old hydrant .....           | Hydrant not required.           |
| Cor. St. Paul and St. J.-Bte st.... | "    | 11 | .....     | 1   | Repaired hydrant rod .....           | Rod broken by frost.            |
| Cor. St. Maurice and Dupré .....    | "    | 11 | .....     | 1   | Put in new valve .....               | Old valve worn out.             |
| Cor. Windsor and Dorchester....     | "    | 11 | 12" ..... | ... | Recaulked joint.....                 | Joint blown out by pressure.    |
| Grand Trunk and Richmond .....      | "    | 11 | .....     | 1   | Exchanged ? nozzle for 5 nozzle..... |                                 |
| Cor. St. Cath. and St-Dominique.    | "    | 13 | .....     | 1   | Repaired hydrant rod .....           | Rod broken by frost.            |
| St. Urbain at Hôtel-Dieu .....      | "    | 14 | .....     | 1   | " " .....                            | " "                             |
| Charlevoix and Chateauguay ....     | "    | 15 | .....     | 1   | Hydrant taken out .....              | Not needed.                     |
| 173 Canning .....                   | "    | 15 | 4" .....  | ... | Put in new piece .....               | Main burst by frost.            |
| Albert and Fulford .....            | "    | 15 | .....     | 1   | Disconnected old hydrant & bonnetted | Not needed.                     |
| Coursol West Fulford .....          | "    | 15 | .....     | 1   | Thawed hydrant.....                  | Hydrant pipe frozen.            |
| Côte des Neiges .....               | "    | 16 | .....     | 1   | " .....                              | "                               |
| Durocher and Prince Arthur .....    | "    | 16 | .....     | 1   | Put washer in seat.....              | Old washer worn out.            |
| Cor. St. Catherine and Closse.....  | "    | 16 | .....     | 1   | Repaired hydrant rod .....           | Rod broken by frost.            |
| Cor. St. Catherine and Mark.....    | "    | 17 | .....     | 1   | " " .....                            | "                               |



|                                    |       |    |               |         |                                   |       |   |
|------------------------------------|-------|----|---------------|---------|-----------------------------------|-------|---|
| Dorchester opp. Labelle.....       | March | 8  | 4" .....      | .....   | Put in a new piece.....           | ..... | Brok. by settling of drain cut.         |
| Atwater South of St. Patrick ..... | "     | 9  | .....         | .....   | Cleaned hydrant .....             | ..... | Hydrant choked.                         |
| Dorchester opp. Makay .....        | "     | 9  | .....         | .....   | Put in new rod .....              | ..... | Rod broken by frost.                    |
| Rachel Cor. Seaton .....           | "     | 9  | 12" .....     | .....   | Recalked joints.....              | ..... | Joint blown out by pressure.            |
| Rachel Cor. Maple. ....            | "     | 9  | 10" .....     | .....   | " .....                           | ..... | " .....                                 |
| St. Dominique and Roy .....        | "     | 10 | .....         | 4 ..... | Put in new spindle.....           | ..... | Spindle broken.                         |
| St. Dominique and Roy .....        | "     | 14 | 4" .....      | .....   | " piece pipe .....                | ..... | Main broken by frost.                   |
| Opp. 71 Young st. ....             | "     | 14 | 4" .....      | .....   | Recalked joint .....              | ..... | Joint blown out by pressure.            |
| 820 Cadieux st. ....               | "     | 15 | 6" .....      | .....   | Thawed main pipe.....             | ..... | Main pipe frozen.                       |
| Montcalm below St. Catherine..     | "     | 16 | .....         | .....   | Put in new valve .....            | ..... | Valve worn out.                         |
| Smith cor. McCord .....            | "     | 16 | .....         | .....   | Renewed brasses on rod.....       | ..... | Brasses " "                             |
| In Canal cor. Seigneur .....       | "     | 16 | 4" & 6" ..... | .....   | Encased with wood box and manure. | ..... | To protect main pipes.                  |
| 326 St. Antoine .....              | "     | 17 | 4" .....      | .....   | Thawed main pipe.....             | ..... | Main frozen.                            |
| In Canal at Wellington bridge...   | "     | 17 | 12" .....     | .....   | Encased with wood box and manure. | ..... | To protect main pipe.                   |
| Mignonne cor. Maisonneuve.....     | "     | 18 | .....         | .....   | Changed the brasses .....         | ..... | Brasses worn out.                       |
| St. Catherine and Beaudry.....     | "     | 18 | .....         | .....   | Recalked nozles .....             | ..... | Nozles loose.                           |
| Grey Nunn and William.. ..         | "     | 18 | .....         | .....   | Put in new valve .....            | ..... | Valve worn out.                         |
| St. James cor. Canning .....       | "     | 21 | .....         | .....   | " another hydrant .....           | ..... | Old hydrant taken out.                  |
| Gain cor. Craig .....              | "     | 22 | .....         | .....   | Thawed hydrant pipe .....         | ..... | Hydrant pipe frozen.                    |
| Victoria near Sherbrooke .....     | "     | 22 | .....         | .....   | " .....                           | ..... | " .....                                 |
| St. Antoine west of Richmond sq    | "     | 22 | 4" .....      | .....   | Put in new piece .....            | ..... | Main pipe broken by frost.              |
| Ogilvie's Mill Seigneurs st.....   | "     | 22 | 4" .....      | .....   | Encased pipe with wood box .....  | ..... | To protect main.                        |
| In Canal at Seigneurs st. bridge   | "     | 23 | 4" .....      | .....   | Put in new piece of pipe.....     | ..... | Pipe broke by log falling on it Road D. |
| St. James and Dominion.....        | "     | 25 | 4" .....      | 4 ..... | Thawed valve; and pipe. ....      | ..... | Pipe and valve frozen.                  |
| St. James and Fulford.....         | "     | 25 | .....         | 6 ..... | Repacked valve .....              | ..... | Packing worn out.                       |
| Nelleda cor. Fullum .....          | "     | 25 | .....         | .....   | Put in new rod and valve .....    | ..... | Rod brok. and valve worn out.           |
| St. Paul opp. Fripone .....        | "     | 27 | .....         | .....   | " .....                           | ..... | " .....                                 |
| Ontario west of St. Denis. ....    | "     | 27 | 6" .....      | .....   | Recalked joint .....              | ..... | Joint blown out by pressure.            |
| Lagauchetière cor. Montcalm....    | "     | 28 | .....         | .....   | Put in new valve .....            | ..... | Old valve worn out.                     |
| St. Lawrence 1st above Rachel..    | "     | 28 | .....         | .....   | " .....                           | ..... | " .....                                 |
| St. Catherine cor. Fort.....       | "     | 28 | .....         | .....   | Thawed pipe to hydrant.....       | ..... | Pipe to hydrant frozen.                 |
| Commissioners cor. Victor.....     | "     | 29 | .....         | .....   | Put in new valve .....            | ..... | Old valve worn out.                     |
| St. Catherine cor. St. Hubert. ... | "     | 30 | .....         | .....   | " .....                           | ..... | " .....                                 |
| Sherbrooke west of Bishop .....    | "     | 30 | 6" .....      | .....   | Recalked joint.....               | ..... | Joint blown out by pressure.            |

Schedule No. 8a *Cont'd*—Showing the Repairs done to Main Pipes, Hydrants and Valves during year 1893.

| POSITION.                            | DATE.    | Diameter. | Valves. | Hydrants. | HOW REPAIRED.                          | Propable cause of injury.          |
|--------------------------------------|----------|-----------|---------|-----------|--|------------------------------------|
| Basin st. under Johnston flume...    | March 31 | 4" .....  | .....   | .....     | Bonnetted 4" pipe outside of wall..... | Hydrant pipe blown out.            |
| St. Antoine cor. St. Martin .....    | " 31     | " .....   | .....   | 1         | Put in new valve .....                 | Old valve worn out.                |
| St. Martin cor. St. Antoine .....    | April 1  | " .....   | .....   | 1         | " a new hydrant.....                   | Colon split on acc't of frost.     |
| Conde st.....                        | " 3      | 4" .....  | .....   | .....     | Recalked joint.....                    | Joint blown out by pressure.       |
| Metcalf above Dorchester .....       | " 4      | " .....   | .....   | 1         | Put in new valve .....                 | Old valve worn out.                |
| Craig cor. Hermine .....             | " 4      | " .....   | .....   | 1         | " .....                                | " "                                |
| Grand Trunk cor. Ropery .....        | " 5      | " .....   | .....   | 1         | " .....                                | " "                                |
| Guy cor. William .....               | " 6      | " .....   | .....   | 1         | " .....                                | " "                                |
| Cor. Beaudry and St. Catherine ..... | " 7      | " .....   | .....   | 1         | Rod put in and new valve .....         | Rod br. by frost val.worn out.     |
| Prince Arthur and St. Famille...     | " 8      | " .....   | .....   | 1         | Put in new valve .....                 | Old valve worn out.                |
| St. Catherine and St. Hubert. ...    | " 8      | " .....   | .....   | 1         | " .....                                | " "                                |
| Peel cor. Express .....              | " 11     | " .....   | .....   | 1         | Recalked joint.....                    | Joint blown out by pressure.       |
| Notre Dame and Montcalm.....         | " 11     | " .....   | .....   | 1         | Put in new valve .....                 | Old valve worn out.                |
| Alexander and Lagauchetière ..       | " 11     | " .....   | 4       | .....     | " spindle.....                         | When shutting key was hit by team. |
| William cor. Ann.....                | " 12     | " .....   | .....   | 1         | Plugged pin hole bottom .....          | Pin hole in bottom.                |
| Sherbrooke west of Drummond..        | " 14     | 30" ..... | .....   | .....     | Put in new piece .....                 | Pipe broke cause unknown.          |
| Sanguinet opp. 250 .....             | " 17     | 4" .....  | .....   | .....     | " .....                                | Pipe bust by frost & old age.      |
| 165 Commissioners.....               | " 17     | 6" .....  | .....   | .....     | " .....                                | Joint blown out by pressure.       |
| Sherbrooke and Amberst .....         | " 18     | " .....   | .....   | 1         | Put on new brasses .....               | Old brasses worn out.              |
| Cor. St. Catherine and St. Hubert    | " 18     | " .....   | .....   | 1         | " valve.....                           | Old valve worn out.                |
| Opp. 129 Commissioners st. ....      | " 18     | 6" .....  | .....   | .....     | Recalked joint.....                    | Joint blown out by pressure.       |
| Charlevoix and Gâteauguay....        | " 18     | " .....   | .....   | 1         | Put new hydrant .....                  | Old hydrant out of repair.         |
| Atwater and Sherbrooke.....          | " 19     | " .....   | 1?      | .....     | Repacked valve .....                   | Old packing worn out.              |
| St. Paul opp. L'riponne .....        | " 19     | " .....   | .....   | 1         | Flawed hydrant pipe .....              | Hydrant pipe frozen.               |
| Shannon st. below William .....      | " 20     | 4' .....  | .....   | .....     | Put in new piece .....                 | Pipe burst.                        |

|                                  |       |    |       |       |       |                                      |                                  |
|----------------------------------|-------|----|-------|-------|-------|--------------------------------------|----------------------------------|
| Dorchester corner Chenneville... | April | 20 | 10"   | ..... | ..... | Recaulked joint .....                | Joint blown out by pressure.     |
| Craig corner Volligeurs.....     | "     | 20 | ..... | ..... | 1     | Put in new valve .....               | Old valve worn out.              |
| Opp. 383 Plessis. ....           | "     | 20 | ..... | ..... | 1     | " " .....                            | " " "                            |
| 49 Centre .....                  | "     | 20 | 4"    | ..... | ...   | " " piece .....                      | Pipe broke by frost.             |
| Visitation corner Delorme Place. | "     | 21 | ..... | ..... | 4     | Repacked valve .....                 | Packing worn out.                |
| Lagauchetière cor. Chenneville.  | "     | 21 | ..... | ..... | 1     | Put in new valve.....                | Old valve worn out.              |
| St. Catherine corner Guy .....   | "     | 21 | ..... | ..... | 1     | " " " .....                          | " " "                            |
| Opp. 56 Sebastopol st.....       | "     | 23 | ..... | ..... | 1     | " " " .....                          | " " "                            |
| Cor. Sherbrooke & St. Dominique  | "     | 24 | ..... | ..... | 1     | " " " .....                          | " " "                            |
| Opp. 73 Visitation .....         | "     | 24 | 4"    | ..... | ...   | " " piece of pipe .....              | Pipe burst by frost.             |
| Stanley corner Sherbrooke .....  | "     | 24 | ..... | ..... | 4     | " " spindle .....                    | Old spindle brok. when shut'g    |
| Mill st. above Waste Weir.....   | "     | 26 | 10"   | ...   | ...   | Recaulked joint.....                 | Joint blown out by pressure.     |
| Bernard st. cor. Bleury .....    | "     | 26 | 4"    | ..... | ...   | Put in a new piece pipe.....         | Pipe burst by settling of earth  |
| Illypolite above Duluth ave..... | "     | 26 | ..... | ..... | 1     | Put in new hydrant .....             | Old hydrant worn out.            |
| Duluth ave. near Park ave.....   | "     | 26 | 6"    | ..... | ...   | " " piece pipe.....                  | Pipe broke by stones.            |
| St. Urbain above Pine ave.....   | "     | 27 | ..... | ..... | 1     | " " valve....                        | Old valve worn out.              |
| Cor. Dorchester & St. Dominique. | "     | 27 | 10"   | ..... | ...   | Recaulked joint.....                 | Joint blown out by pressure.     |
| Cor. Amherst and Lagauchetière.  | "     | 27 | 4"    | ..... | ...   | Put in a new piece pipe .....        | Pipe burst by frost.             |
| Park Ave. opp. Duluth Ave. ....  | "     | 28 | ..... | ..... | 1     | " " valve.....                       | Old valve worn out.              |
| Seigneurs opp. McDougalls .....  | April | 29 | ..... | ..... | 1     | Recaulked joint.....                 | Joint blown out by pressure.     |
| Opp. 212 Aqueduct .....          | "     | 29 | ..... | ..... | 1     | Put in new valve .....               | Old valve worn out.              |
| Opp. 40 St. Maurice.....         | "     | 29 | 10"   | ..... | ...   | Put in a new piece pipe .....        | Old pipe broken by frost.        |
| Seigneurs st. Bridge.....        | May   | 1  | ..... | ..... | 1     | " " hydrant .....                    | Old hydrant out of repair.       |
| 122 Mill st.....                 | "     | 29 | ..... | ..... | 1     | Raised hydrant to street level ..... | To low for street level.         |
| Sanguinet below St. Catherine... | "     | 1  | 4"    | ..... | ...   | " " piece pipe.....                  | Pipe burst by frost.             |
| Dufferin corner Rachel .....     | "     | 1  | ..... | ..... | 1     | " " valve .....                      | Piece of hoop iron dest. old one |
| Parthenais above Ontario .....   | "     | 2  | 4"    | ..... | ...   | Put in a piece of pipe .....         | Pipe broke by frost.             |
| Mansfield corner Sherbrooke..... | "     | 3  | ..... | ..... | 6     | Put in a new stuffing box.....       | Stuffing box broke.              |
| Coursol st.....                  | "     | 3  | ..... | ..... | 1     | " " valve .....                      | Old valve worn out.              |
| Ontario st. cor. Iberville.....  | "     | 4  | ..... | ..... | 1     | " " hydrant .....                    | Old hydrant rod broken.          |
| Opp. 56 McGill College ave.....  | "     | 4  | 4"    | ..... | ...   | " " piece pipe .....                 | " pipe brok. by settl'g of earth |
| Dorchester corner Hanover.....   | "     | 6  | ..... | ..... | 1     | " " valve .....                      | Old valve worn out.              |
| Opp 22 Sanguinet .....           | "     | 6  | 6"    | ..... | ...   | Recaulked joint.....                 | Joint blown out by pressure.     |
| Opp. 122 Mill st.....            | "     | 6  | 10"   | ..... | ...   | " " .....                            | " " "                            |
| St. Antoine corner Desrivères... | "     | 8  | ..... | ..... | 1     | Put in new valve .....               | Old valve worn out.              |

Schedule No. 8a *Cont'd*—Showing the Repairs done to Main Pipes, Hydrants and Valves during year 1893.

| POSITION.                         | DATE. | Diameter. | Valves. | Hydrants. | HOW REPAIRED.                        | Probable cause of injury.                 |
|-----------------------------------|-------|-----------|---------|-----------|--------------------------------------|---|
| Opp. 155 St. Dominique.....       | May 9 | 4" .....  | ...     | 1         | Put in a new piece of pipe... ..     | Pipe broke by settling of earth           |
| St. Urbain above Milton.....      | " 10  | " .....   | ...     | 1         | Put in new valve .....               | Old valve worn out.                       |
| Cor. Amherst and Mignonne.....    | " 10  | " .....   | ...     | 1         | Put in a new pipe drain .....        | Old pipe choked.                          |
| Cor. Notre-Dame and Parthenais.   | " 12  | " .....   | ...     | 1         | Recaulked joint on hydrant pipe..... | Joint blown out.                          |
| St. Maurice corner St. Henry..... | " 13  | " .....   | ...     | 1         | Put in new hydrant valve.....        | Old one blown out.                        |
| Next 2371 St. Catherine.....      | " 13  | 6" .....  | ...     | ...       | Recaulked joint .....                | Joint blown out by pressure.              |
| Opp. 13 Berthelot. ....           | " 13  | 4" .....  | ...     | ...       | Put in a new piece.....              | Old pipe brok. old age.                   |
| Dorchester opp. St. Phillip.....  | " 13  | " .....   | ...     | 1         | Recaulked joint.....                 | End of hydrant pipe blown out not in use. |
| Opp. 782 Cadieux st. ....         | " 13  | " .....   | ...     | 1         | Took out hydrant .....               | Hydrant.                                  |
| St. James cor. Canning .....      | " 15  | " .....   | ...     | 1         | Put in new rod.....                  | Old rod broken.                           |
| Shaw above Craig ....             | " 15  | " .....   | ...     | 1         | " " valve.....                       | " valve worn out.                         |
| Guilbault cor. St. Lawrence.....  | " 16  | " .....   | 4       | ...       | " a new spindle.....                 | " spindle broken.                         |
| " " St. Urbain .....              | " 16  | " .....   | 4       | ...       | " " " .....                          | " " "                                     |
| William cor. Eleanor .....        | " 17  | " .....   | ...     | 1         | " " valve .....                      | " valve worn out.                         |
| " " Young.....                    | " 17  | " .....   | ...     | 1         | " " " .....                          | " " "                                     |
| Opp. 361 Neigneurs.....           | " 17  | 6" .....  | ...     | ...       | Recaulked joint.....                 | Joint blown out by pressure.              |
| Windsor cor. Dorchester.....      | " 18  | " .....   | ...     | 1         | Put in new valve and rod .....       | Rod bent and valve worn out.              |
| Cor. McGill Coll. Ave & Burnside. | " 18  | " .....   | ...     | 1         | " " " .....                          | Old valve worn out.                       |
| Sherbrooke cor. St. Mathew.....   | " 19  | " .....   | ...     | 1         | " " " and rod.....                   | Rod bent from rough usage valve worn out. |
| Bleury cor. Concord.....          | " 20  | " .....   | 4       | ...       | Repacked valve ..                    | Packing worn out.                         |
| Cor. Bleury and St. Catherine.... | " 20  | " .....   | 6       | ...       | " " .....                            | " "                                       |
| Sherbrooke cor. St. Mark .....    | " 22  | " .....   | ...     | 1         | New rod put in and new valve .....   | Rod bent & old valve worn out.            |
| 194 Aqueduct st .....             | " 22  | 4" .....  | ...     | ...       | Recaulked joint.....                 | Joint blown out on account of pressure.   |

|                                  |      |    |       |       |   |                                |
|----------------------------------|------|----|-------|-------|---|--------------------------------|
| Soulange and Centre .....        | "    | 22 | ..... | 6     | Put in new spindle and packing box.       | of pressure.                   |
| Common west of Port .....        | "    | 23 | ..... | 1     | hydrant valve.....                        | Old spindle brok. & pack. box. |
| Opp. 280 Dorchester .....        | "    | 23 | 10"   | ..... | Recaulked joint.....                      | Old one worn out.              |
| " 109 Versailles .....           | "    | 23 | 4"    | ..... | "   | Joint blown out by pressure.   |
| Pine Ave near Oxenden.....       | "    | 23 | 12"   | ..... | "   | "                              |
| Canning and Notre Dame.....      | "    | 24 | ..... | 4     | Put in a new valve.....                   | Old valve useless.             |
| Chenneville cor. Lagauchetière.. | "    | 25 | ..... | 6     | Repacked valve.....                       | " packing worn out.            |
| Central Fire Station .....       | "    | 25 | ..... | 1     | Put in a new valve.....                   | " valve worn out.              |
| Maisonneuve cor. Ontario .....   | "    | 26 | ..... | 8     | " " spindle .....                         | " spindle broken.              |
| Mackay above Dorchester .....    | "    | 27 | ..... | ..... | 1 Rod straightened and new valve.....     | Rod ben and valve worn out     |
| Dorchester opp St Mark .....     | "    | 29 | ..... | 1     | Put in a new hydrant .....                | " broken in old hydrant.       |
| Albert near Felix .....          | "    | 30 | ..... | 1     | " " valve .....                           | Old valve worn out.            |
| St. Martin and St. Antoine ..... | "    | 30 | ..... | 4     | Repacked valve .....                      | " packing worn out.            |
| Notre Dame at Military Prison... | "    | 31 | ..... | 1     | Took out hydrant.....                     | Not required.                  |
| Cor St. Urbain and Guibault ..   | "    | 31 | ..... | 8     | Replaced casing of valve .....            | Taking away for repairs.       |
| Knox and Hibernia st. ....       | "    | 30 | ..... | 4     | Raised valve chamber .....                | Below level of street.         |
| Coleraine and Charlevoix .....   | "    | 30 | ..... | 6     | " " .....                                 | " " "                          |
| Burnside cor. Peel .....         | June | 1  | ..... | 1     | Renewed valve .....                       | Old one worn out.              |
| St. Antoine cor. Aqueduct.....   | "    | 1  | ..... | 1     | Put in a new valve .....                  | " "                            |
| St. Urbain cor. Mignonne.....    | "    | 1  | 4"    | ..... | Recaulked joint.....                      | Joint blown out by pressure.   |
| Fortier cor. St. Dominique ..... | "    | 1  | 4"    | ..... | " " .....                                 | " "                            |
| Mance cor. Milton.....           | "    | 2  | ..... | 1     | Straightened rod in hydrant.....          | Bent from rough usage.         |
| Commissioners east of Bonsec'rs. | "    | 2  | ..... | 1     | Put in a new valve .....                  | Old valve worn out.            |
| St. James cor. Mountain .....    | "    | 2  | ..... | 10    | Renewed valve chamber .....               | Was falling from decay.        |
| Cor. Maisonneuve and Ontario ..  | "    | 2  | ..... | 8     | " " spindle .....                         | Old spindle bent.              |
| Cor. Frontenac and Logan .....   | "    | 2  | 4"    | ..... | Put in a new piece of pipe .....          | Broke driv a nozzle very thin  |
| St. Martin cor. Notre Dame ..... | "    | 2  | ..... | 6     | " " valve .....                           | Old one useless old age.       |
| Cadieux cor. Rachel.....         | "    | 3  | ..... | 1     | Put in a new valve .....                  | Old one worn out.              |
| Colborne cor. Common .....       | "    | 3  | ..... | 1     | Straightened hydrant rod.....             | Hydrant rod bent.              |
| Beaudry cor. St. Catherine.....  | "    | 3  | ..... | 12    | Eased valve .....                         | Valve stiff and hard to open.  |
| Mountain cor. St. Antoine .....  | "    | 3  | ..... | 12    | Put in new packing & 2 eye bolts .....    | Old packing worn out.          |
| Rozel and Charlevoix .....       | "    | 5  | ..... | ..... | Raised valve chamber to street level..... | Below street level.            |
| Dufresne and St. Catherine.....  | "    | 5  | ..... | 12    | Eased valve .....                         | Valve stiff.                   |



Schedule No. 8a Cont'd—Showing the Repairs done to Main Pipes, Hydrants and Valves during year 1893.

| POSITION.                        | DATE | Diameter. | Valves | Hydrants | HOW REPAIRED.                            | Probable cause of injury.    |
|----------------------------------|------|-----------|--------|----------|--|------------------------------|
| Fullum and St. Catherine.....    | June | 5         | 12     | 1        | Put in new gate.....                     | Old one out of repair.       |
| Cadieux cor. Mignonne.....       | "    | 5         | 4      | 1        | Rebuilt valve chamber.....               | Falling in from decay.       |
| Dufresne or St. Catherine.....   | "    | 6         | 6      | 1        | Put in a new spindle.....                | Old spindle broken.          |
| Prince Arthur cor. Durocher..... | "    | 6         | 6      | 1        | Repacked valve.....                      | " packing worn out.          |
| Lincoln Ave.....                 | "    | 7         | 1      | 1        | Put in a new valve.....                  | " valve worn out.            |
| McGill cor. St. Paul.....        | "    | 8         | 1      | 1        | Strengthened hydrant rod.....            | Hydrant rod bent.            |
| Dorchester near Seymour Ave..... | "    | 8         | 1      | 1        | Put in a new valve.....                  | Old valve worn out.          |
| Mon morency cor. Richardson..    | "    | 9         | 1      | 1        | " " " ".....                             | " " " "                      |
| Mill st. a Ogilvie..             | "    | 9         | 1      | 1        | " " " ".....                             | " " " "                      |
| Opp. 460 Dorchester..            | "    | 9         | 1      | 1        | Recaulked joint.....                     | Joint blown out by pressure. |
| Plessis cor. Lagauchetière..     | "    | 9         | 1      | 1        | Repacked valve.....                      | Old packing worn out.        |
| Opp 33 St. Rose.....             | "    | 10        | 1      | 1        | Recaulked joint.....                     | Joint blown out by pressure. |
| Craig cor. Victoria sq.....      | "    | 10        | 1      | 1        | Put on a new washer.....                 | Washer blown out by " "      |
| St. Dominique cor. Fortier.....  | "    | 10        | 1      | 1        | Put in a new valve.....                  | Old one worn out.            |
| St. Rose cor. Maisonneuve.....   | "    | 12        | 1      | 1        | Replaced hydrant.....                    | " hydrant blown out.         |
| Fulford cor. Notre Dame.....     | "    | 12        | 1      | 1        | Put in a new hydrant valve.....          | " one worn out               |
| St. James and Fulford.....       | "    | 12        | 6      | 1        | Valve chamber rebuilt.....               | " chamber decayed.           |
| Drummond st. at Rink.....        | "    | 13        | 1      | 1        | Put in a new valve.....                  | " one worn out.              |
| Craig cor. Lacroix.....          | "    | 13        | 1      | 1        | Recaulked joint.....                     | Joint blown out by pressure. |
| St. Charles and Charlevoix.....  | "    | 13        | 6      | 1        | Rebuilt valve chamber.....               | Chamber decayed.             |
| Opp. 47 Hypolite.....            | "    | 14        | 1      | 1        | Strengthened rod & put in new valve..... | Valve worn out & rod bent.   |
| Ontario cor. Balmoral.....       | "    | 14        | 1      | 1        | Put in a new valve.....                  | Old one worn out.            |
| St. James near G. T. R. Station. | "    | 14        | 1      | 1        | Recaulked joint.....                     | Joint blown out by pressure. |
| Juror cor. Hermine.....          | "    | 15        | 1      | 1        | Put in a new valve.....                  | Old one worn out.            |
| St. Dominique cor. Charbonneau   | "    | 15        | 1      | 1        | " " " ".....                             | " " " "                      |
| Cor. Sherbrooke & Atwater Ave    | "    | 16        | 1      | 1        | " " " ".....                             | " " " "                      |

|                                     |      |    |       |       |                                       |                      |
|-------------------------------------|------|----|-------|-------|---------------------------------------|----------------------|
| Cor. St. James and Seigneurs.....   | June | 16 | ..... | 1     | Put in a new valve .....              | Old one worn out.    |
| Notre Dame at Dow's Brewery.....    | "    | 17 | ..... | 1     | " " .....                             | " "                  |
| Visitation cor. Legauchetiere.....  | "    | 17 | ..... | 4     | Repacked valve.....                   | Packing worn out.    |
| Opp. 6 Knox st. ....                | "    | 17 | 6"    | ..... | Recaulked joint.....                  |                      |
| Moreau st. cor. Stadacona.....      | "    | 19 | ..... | 1     | Put in a new valve .....              | Old one worn out.    |
| Opp. 75 Congregation.....           | "    | 19 | ..... | 1     | " " " .....                           | " "                  |
| St. Catherine at No. 5 Fire Station | "    | 20 | ..... | 1     | " " " .....                           | " "                  |
| St. Antoine past Dominion .....     | "    | 20 | ..... | 4     | New stuffing box and new spindle..... | Spindle br.& pack'g  |
| " and Richmond sq ..                | "    | 20 | ..... | 4     | Repacked valve .....                  | Packing worn out.    |
| Opp. 380 Panet st. ....             | "    | 21 | ..... | 1     | Put in a new valve .....              | Old one worn out.    |
| Hypolite above Sherbrooke .....     | "    | 21 | ..... | 1     | Repaired hydrant chamber .....        | " chamber decaye     |
| Robin cor. Visitation .....         | "    | 22 | ..... | 4     | Repacked valve .....                  | " packing worn o     |
| Commissioners cor. J.-Cartier sq    | "    | 22 | ..... | 1     | Put in a new valve .....              | " one worn out.      |
| St. Antoine and Seigneurs.....      | "    | 22 | ..... | 6     | " " " .....                           | " "                  |
| St. Catherine east of St Phillip..  | "    | 23 | ..... | 1     | " " " .....                           | " "                  |
| Cor. Craig and Visitation .....     | "    | 24 | ..... | 1     | Put in a new valve.....               | Old one worn out     |
| Donagan st.....                     | "    | 26 | ..... | 1     | " " " .....                           | " "                  |
| Cadieux cor. Ontario.....           | "    | 26 | ..... | 1     | " " " .....                           | " "                  |
| Dorchester cor. Panet.....          | "    | 27 | ..... | 1     | Recaulked joint on hydrant.....       | Joint blown out by l |
| Notre Dame and Richmond.....        | "    | 27 | ..... | 6     | Repacked stuffing box.....            | Packing worn out.    |
| St. Antoine cor. " .....            | "    | 27 | ..... | 4     | " " " .....                           | " "                  |
| St. Famille 1st ab. Sherbrooke..    | "    | 28 | ..... | 1     | Put in new hydrant valve .....        | Old one worn out.    |
| Papineau south of Ontario .....     | "    | 28 | ..... | 1     | " " " .....                           | " "                  |
| Opp. 117 St. Paul. ....             | "    | 29 | ..... | 1     | " " " .....                           | " "                  |
| Windsor cor. Dorchester.....        | "    | 29 | 12"   | ..... | Recaulked joint.....                  | Joint blown out by l |
| St-James and Fulford .....          | "    | 30 | ..... | 1     | Put in a new valve.....               | Old one worn out.    |
| Notre-Dame east of St. John .....   | July | 1  | ..... | 1     | " " " .....                           | " "                  |
| St. Louis cor. Berri.....           | "    | 1  | ..... | 1     | Took out old hydrant.....             | Not used any more.   |
| Seigneurs cor. Notre-Dame.....      | "    | 1  | ..... | 6     | Rebuilt valve chamber.....            | Valve chamber deca   |
| St. Antoine cor St Margaret.....    | "    | 3  | ..... | 6     | Put in a new spindle .....            | Old one broken.      |
| Richmond cor. Basin.....            | "    | 3  | ..... | 1     | Put in a new valve .....              | Old one worn out.    |
| St. Catherine cor. Crosse.....      | "    | 3  | ..... | 4     | Put in a new spindle.....             | Old one broken.      |
| Seigneurs cor. Notre-Dame.....      | "    | 3  | ..... | 6     | Rebuilt valve chamber.....            | Old chamber decaye   |
| St. Peter cor. Commissioners.....   | "    | 5  | ..... | 1     | Put in a new valve .....              | Old one worn out.    |
| Guy at Grey Nunnery.....            | "    | 5  | ..... | 1     | " " " .....                           | " "                  |

Schedule No. *Se Cont'd*—Showing the Repairs done to Main Pipes, Hydrants and Valves during year 1893.

| POSITION                           | DATE | Diameter | Valves. | Hydrants. | HOW REPAIRED.                 | Probable cause of injury.       |
|------------------------------------|------|----------|---------|-----------|-------------------------------|---------------------------------|
| Barré cor McCord .....             | July | 5        | 4       | 1         | Put in a new spindle.....     | Old one broken.                 |
| Dalhousie Fire Station.....        | "    | 6        | 1       | 1         | Put in a new valve.....       | " worn out.                     |
| Notre-Dame cor Poupart .....       | "    | 6        | 1       | 1         | Repaired hydrant chamber..... | Hydrant chamber decayed.        |
| Victoria sq.....                   | "    | 7        | 4       | 1         | Repacked valve.....           | Old packing worn out.           |
| St-Urbain below P. Arthur.....     | "    | 7        | 1       | 1         | Put in a new valve.....       | Old one worn out.               |
| Papineau cor. Dorchester.....      | "    | 7        | 1       | 1         | " " " ".....                  | " "                             |
| Ann south Brennan .....            | "    | 7 4"     | 1       | 1         | Recaulked joint.....          | Joint blown out by pressure.    |
| Carleton road .....                | "    | 7 12"    | 1       | 1         | Caulked joint.....            | " "                             |
| Opp. 47 St. Rosa.....              | "    | 8 4"     | 1       | 1         | Put in a new piece.....       | Pipe broke by settling of earth |
| Wellington cor. Charlevoix.....    | "    | 10       | 1       | 1         | " " valve.....                | Old one worn out.               |
| Britannia cor. Reverside .....     | "    | 10       | 1       | 1         | " " " ".....                  | " "                             |
| St. Rose cor. Visitation.....      | "    | 10       | 4       | 1         | " " stuffing box.....         | " broken.                       |
| St. Catherine cor. Champlain. ..   | "    | 11       | 1       | 1         | " " rod.....                  | Rod broken by M. S. R. R. men   |
| " " Wolfe.....                     | "    | 11       | 1       | 1         | " " " ".....                  | " "                             |
| " " Delormier av. ....             | "    | 12       | 1       | 1         | " " valve.....                | Old one worn out.               |
| Ontario cor. Moreau.....           | "    | 13       | 1       | 1         | " " " ".....                  | " "                             |
| Dorchester cor. Panet .....        | "    | 13       | 1       | 1         | Repaired hydrant chamber..... | Old chamber decayed.            |
| Victoria sq.....                   | "    | 13       | 12      | 1         | Put in a new spindle.....     | Old spindle broken.             |
| St James cor St Martin.....        | "    | 14       | 1       | 1         | " " valve.....                | Old one worn out.               |
| Fulford cor St. Antoine. ....      | "    | 15       | 1       | 1         | " " " ".....                  | " "                             |
| Dorchester cor. Bleury.....        | "    | 15       | 1       | 1         | Lowered hydrant.....          | Hydrant too high for street.    |
| Opp. 470 Seigneurs.....            | "    | 15 6"    | 1       | 1         | Recalked joint.....           | Blown out by pressure.          |
| William cor. McGill.....           | "    | 17       | 1       | 1         | Put in a new valve.....       | Old one worn out.               |
| Gain cor Craig.....                | "    | 18       | 1       | 1         | " " " ".....                  | " "                             |
| St Rose cor Maisonneuve. ....      | "    | 18       | 1       | 1         | " " " ".....                  | " "                             |
| Opp 28 <sup>2</sup> Aqueduct ..... | "    | 18 4"    | 1       | 1         | Recaulked joint .....         | Joint blown out by pressure.    |

|                                   |      |    |       |       |   |                                 |                              |
|-----------------------------------|------|----|-------|-------|---|---------------------------------|------------------------------|
| Dorchester cor. Alexander.....    | July | 19 | ..... | ..... | 1 | Put in a new valve .....        | Old one worn out.            |
| St. Augustin corner Basin.....    | "    | 19 | ..... | ..... | 1 | Recaulked joint .....           | Joint blown out by pressure. |
| Conde opp. Richardson .....       | "    | 20 | ..... | ..... | 1 | Put in a new valve .....        | Old one worn out.            |
| Aqueduct opp. Adeline.. ..        | "    | 20 | 4"    | ..... | 1 | Recaulked joint .....           | Joint blown out by pressure. |
| Lafontaine corner Visitation..... | "    | 21 | ..... | 4     | 1 | Put in new packing.....         | Old packing worn out.        |
| Wolfe corner Robin .....          | "    | 21 | ..... | ..... | 1 | " " valve.....                  | Old one worn out.            |
| Canning below St. Antoine .....   | "    | 22 | ..... | ..... | 1 | Replaced by another hydrant..   | Old hydrant split.           |
| McGill and St. Paul.....          | "    | 22 | ..... | 10    | 1 | Put in a new spindle ..         | Old spindle broken.          |
| Craig and Wolfe .....             | "    | 22 | ..... | 6     | 1 | " " ..                          | " " "                        |
| Shannon corner William .....      | "    | 24 | ..... | ..... | 1 | " " valve .....                 | Old one worn out.            |
| Notre-Dame 2nd last East .....    | "    | 25 | ..... | ..... | 1 | " " ..                          | " " "                        |
| Notre-Dame corner Montcalm. ..    | "    | 25 | ..... | 4     | 1 | " " spindle .....               | Old one broken.              |
| Inspector above St. Antoine ..... | "    | 26 | ..... | ..... | 1 | Put in a nut on rod .....       | Old nut loose and no good.   |
| Cor. Mance and Pine Ave. ....     | "    | 26 | ..... | ..... | 1 | Put in a new valve .....        | Old one worn out.            |
| Lagauchetière corner Papineau..   | "    | 27 | ..... | ..... | 1 | Put on new brasses.....         | Old ones stolen.             |
| Napoléon corner Cadieux.....      | "    | 27 | ..... | ..... | 1 | Put in a new valve .....        | Old one worn out.            |
| St. Catherine and St. Hubert..... | "    | 28 | ..... | ..... | 1 | " " ..                          | " " "                        |
| Dorchester corner St. Hubert....  | "    | 28 | ..... | ..... | 1 | Repairing hydrant chamber ..... | Old chamber decayed.         |
| Opp. 132 German .....             | "    | 28 | ..... | ..... | 1 | " " ..                          | " " "                        |
| Dominion corner St. James .....   | "    | 29 | ..... | ..... | 1 | Put in a new valve .....        | Old one worn out.            |
| Duluth corner Berri .....         | "    | 31 | ..... | ..... | 1 | " " ..                          | " " "                        |
| Barré st. corner McCord.....      | Aug. | 1  | ..... | ..... | 1 | " " ..                          | " " "                        |
| Lagauchetière corner Cadieux..    | "    | 1  | ..... | ..... | 1 | Renewing hydrant chamber .....  | Hydrant chamber decayed.     |
| Basin corner St. Augustin .....   | "    | 1  | ..... | ..... | 1 | Rebuilt " " ..                  | " " "                        |
| Delorimier Ave. cor. Lafontaine   | "    | 2  | ..... | ..... | 1 | Put in a new valve .....        | Old one worn out.            |
| Water corner Voltigeurs st.....   | "    | 3  | ..... | ..... | 1 | " " ..                          | " " "                        |
| Canning near Coursol.....         | "    | 3  | ..... | ..... | 1 | Rebuilt hydrant chamber .....   | Hydrant chamber decayed.     |
| Osborne opp. Stanley .....        | "    | 4  | ..... | ..... | 1 | Put in a new valve .....        | Old one worn out.            |
| Lagauchetière corner Campeau..    | "    | 4  | ..... | ..... | 1 | Rebuilt hydrant chamber .....   | Old one decayed.             |
| Cor. Latour and St. Monique ....  | "    | 4  | ..... | ..... | 1 | Recaulked joint .....           | Joint blown out by pressure. |
| Visitation corner Logan.....      | "    | 5  | ..... | ..... | 1 | Put in a new valve .....        | Old one worn out.            |
| Lagauchetière corner Berri .....  | "    | 5  | ..... | ..... | 1 | " " ..                          | " " "                        |
| Versailles under G. T. R. track.. | "    | 6  | 4"    | ..... | 1 | Recaulked joint.....            | Joint blown out by pressure. |
| Ann st. " " ..                    | "    | 6  | 4"    | ..... | 1 | " " ..                          | " " "                        |
| St. James West of St. Lawrence.   | "    | 7  | ..... | ..... | 1 | Put in a new valve .....        | Old one worn out.            |

... conducted year 1993.

| No. | Name of Person  | Address           | Occupation | Remarks                |
|-----|-----------------|-------------------|------------|------------------------|
| 1   | John Smith      | 123 Main St.      | Merchant   | Went to London.        |
| 2   | Mary Jones      | 456 Elm St.       | Housewife  | Went to New York.      |
| 3   | James Brown     | 789 Oak St.       | Farmer     | Went to Chicago.       |
| 4   | Elizabeth White | 101 Pine St.      | Teacher    | Went to Boston.        |
| 5   | Robert Green    | 202 Cedar St.     | Blacksmith | Went to Philadelphia.  |
| 6   | Sarah Black     | 303 Birch St.     | Widow      | Went to Washington.    |
| 7   | William Hall    | 404 Maple St.     | Physician  | Went to St. Louis.     |
| 8   | Ann Miller      | 505 Walnut St.    | Shopkeeper | Went to New Orleans.   |
| 9   | George Taylor   | 606 Chestnut St.  | Lawyer     | Went to Baltimore.     |
| 10  | Elizabeth King  | 707 Spruce St.    | Writer     | Went to San Francisco. |
| 11  | Thomas Scott    | 808 Hickory St.   | Engineer   | Went to Portland.      |
| 12  | Mary Adams      | 909 Ash St.       | Artist     | Went to New York.      |
| 13  | John Baker      | 1010 Elm St.      | Merchant   | Went to London.        |
| 14  | Elizabeth Clark | 1111 Oak St.      | Housewife  | Went to New York.      |
| 15  | James Wilson    | 1212 Pine St.     | Farmer     | Went to Chicago.       |
| 16  | Sarah Moore     | 1313 Cedar St.    | Teacher    | Went to Boston.        |
| 17  | Robert Lewis    | 1414 Birch St.    | Blacksmith | Went to Philadelphia.  |
| 18  | Ann Walker      | 1515 Maple St.    | Widow      | Went to Washington.    |
| 19  | William Young   | 1616 Walnut St.   | Physician  | Went to St. Louis.     |
| 20  | Mary Hall       | 1717 Chestnut St. | Shopkeeper | Went to New Orleans.   |
| 21  | George King     | 1818 Spruce St.   | Lawyer     | Went to Baltimore.     |
| 22  | Elizabeth Scott | 1919 Hickory St.  | Writer     | Went to San Francisco. |
| 23  | Thomas Adams    | 2020 Ash St.      | Engineer   | Went to Portland.      |
| 24  | Mary Baker      | 2121 Elm St.      | Artist     | Went to New York.      |
| 25  | John Clark      | 2222 Oak St.      | Merchant   | Went to London.        |
| 26  | Elizabeth Green | 2323 Pine St.     | Housewife  | Went to New York.      |
| 27  | James White     | 2424 Cedar St.    | Farmer     | Went to Chicago.       |
| 28  | Sarah Black     | 2525 Birch St.    | Teacher    | Went to Boston.        |
| 29  | William Hall    | 2626 Maple St.    | Blacksmith | Went to Philadelphia.  |
| 30  | Ann Miller      | 2727 Walnut St.   | Widow      | Went to Washington.    |
| 31  | George Taylor   | 2828 Chestnut St. | Physician  | Went to St. Louis.     |
| 32  | Mary King       | 2929 Spruce St.   | Shopkeeper | Went to New Orleans.   |
| 33  | John Scott      | 3030 Hickory St.  | Lawyer     | Went to Baltimore.     |
| 34  | Elizabeth Adams | 3131 Ash St.      | Writer     | Went to San Francisco. |
| 35  | Thomas Baker    | 3232 Elm St.      | Engineer   | Went to Portland.      |
| 36  | Mary Clark      | 3333 Oak St.      | Artist     | Went to New York.      |
| 37  | James Green     | 3434 Pine St.     | Merchant   | Went to London.        |
| 38  | Sarah White     | 3535 Cedar St.    | Housewife  | Went to New York.      |
| 39  | Robert Black    | 3636 Birch St.    | Farmer     | Went to Chicago.       |
| 40  | Ann Hall        | 3737 Maple St.    | Teacher    | Went to Boston.        |
| 41  | William Miller  | 3838 Walnut St.   | Blacksmith | Went to Philadelphia.  |
| 42  | Mary Taylor     | 3939 Chestnut St. | Widow      | Went to Washington.    |
| 43  | George King     | 4040 Spruce St.   | Physician  | Went to St. Louis.     |
| 44  | Elizabeth Scott | 4141 Hickory St.  | Shopkeeper | Went to New Orleans.   |
| 45  | James Adams     | 4242 Ash St.      | Lawyer     | Went to Baltimore.     |
| 46  | Sarah Baker     | 4343 Elm St.      | Writer     | Went to San Francisco. |
| 47  | John Clark      | 4444 Oak St.      | Engineer   | Went to Portland.      |
| 48  | Mary Green      | 4545 Pine St.     | Artist     | Went to New York.      |
| 49  | Thomas White    | 4646 Cedar St.    | Merchant   | Went to London.        |
| 50  | Elizabeth Black | 4747 Birch St.    | Housewife  | Went to New York.      |

|                                |       |    |          |   |                                   |                              |
|--------------------------------|-------|----|----------|---|-----------------------------------|------------------------------|
| Custom House sq. and St. Paul. | Aug.  | 25 | .....    | 1 | Put in new valve.....             | Old one worn out.            |
| St. Luke and St. Mathew        | "     | 25 | .....    | 1 | " " ".....                        | " " "                        |
| Parthenals near Campeau        | "     | 26 | .....    | 1 | " " ".....                        | " " "                        |
| Sherbrooke cor. Hutchison      | "     | 26 | 12"..... | 1 | Caulked joints on high level..... | Joint blown out by pressure. |
| St. Catherine cor. Bishop.     | "     | 28 | .....    | 1 | Put in new hydrant valve.....     | Old one worn out.            |
| Lusignan cor. Notre Dame       | "     | 28 | .....    | 1 | " " ".....                        | " " "                        |
| Kent cor. Shaw                 | "     | 29 | .....    | 4 | Repacked valve.....               | " packing worn out.          |
| Craig cor. St. Denis           | "     | 30 | .....    | 1 | Put in new valve.....             | " one worn out.              |
| Sherbrooke cor. University     | "     | 30 | .....    | 1 | " " ".....                        | " " "                        |
| Shaw cor. Craig                | "     | 31 | .....    | 4 | " " spindle.....                  | " spindle broke.             |
| Stadacona cor. Moreau          | "     | 31 | .....    | 1 | " " valve.....                    | " one worn out.              |
| Opp. 86 St. Christophe         | Sept. | 1  | .....    | 1 | " " ".....                        | " " "                        |
| St. Catherine cor. St. Mark    | "     | 1  | .....    | 6 | " " spindle.....                  | " one stripped.              |
| Plessis cor. Larivière         | "     | 2  | .....    | 1 | " " valve.....                    | " one worn out.              |
| Opp. 186 St. Christophe        | "     | 2  | .....    | 1 | Repaired hydrant well.....        | Hydrant well decayed.        |
| Atwater and Centre             | "     | 2  | 24"..... | 1 | Recaulked joint.....              | Joint blown out by pressure. |
| St. Catherine cor. Davidson    | "     | 4  | 12"..... | 1 | " " ".....                        | " " "                        |
| Panet cor. Lafontaine          | "     | 4  | .....    | 1 | Put in new valve.....             | Old one worn out.            |
| Ontario cor. Papineau Ave.     | "     | 4  | .....    | 1 | " " ".....                        | " " "                        |
| Soulange and Centre            | "     | 5  | .....    | 4 | " " spindle.....                  | " one broken.                |
| Bourgeois st. opp. Pavard      | "     | 5  | .....    | 6 | " " ".....                        | " " "                        |
| Drolet cor. Rachel             | "     | 5  | .....    | 6 | " " valve.....                    | " " "                        |
| McCord cor. Murray             | "     | 6  | .....    | 1 | " " ".....                        | " worn out.                  |
| " " William                    | "     | 6  | .....    | 1 | " " stuffing box.....             | " broken.                    |
| St. Catherine cor. Aymer       | "     | 7  | .....    | 1 | " " spindle.....                  | " " "                        |
| Wellington cor. Charlevoix     | "     | 8  | .....    | 4 | " " valve.....                    | " worn out.                  |
| Notre Dame near Papineau sq.   | "     | 9  | 24"..... | 1 | " " piece pipe.....               | Settling of cut and pipe.    |
| Amherst cor. Roy               | "     | 11 | .....    | 1 | " " hydrant valve.....            | Old one worn out.            |
| Dorchester cor. Stanley        | "     | 12 | .....    | 1 | " " ".....                        | " " "                        |
| Amherst cor. Craig             | "     | 12 | 4".....  | 1 | Recaulked joint.....              | Joint blown out by pressure. |
| Wheel House                    | "     | 13 | 30"..... | 1 | " " in tunnel.....                | " " "                        |
| Coursol cor. Dominion          | "     | 14 | .....    | 1 | Put in a new hydrant valve.....   | Old one worn out.            |
| Opp. 14 Cathedral              | "     | 14 | 4".....  | 1 | Joint recaulked.....              | Blown out by pressure.       |
| " 16 Farm                      | "     | 14 | 4".....  | 1 | " " ".....                        | " " "                        |
| Ontario cor. Maisonneuve       | "     | 16 | .....    | 1 | Put in a new hydrant valve.....   | Old one worn out.            |

Schedule No. 8a *Cont'd*—Showing the Repairs done to Main Pipes, Hydrants and Valves during year 1893.

| POSITION.                        | DATE.    | Diameter. | Valves.   |         | HOW REPAIRED.                    | Probable cause of injury.      |
|----------------------------------|----------|-----------|-----------|---------|----------------------------------|--------------------------------|
|                                  |          |           | Hydrants. | Valves. |                                  |                                |
| N.-Dame opp. N.-Dame Hospital    | Sept. 16 | .....     | 1         | .....   | Put in a new hydrant valve.....  | Old one worn out.              |
| Cor. Dorchester and Drummond.    | " 16     | 4" .....  | ..        | .....   | " " piece of pipe.....           | Pipe broken by settling of cut |
| Manufacturers cor. d'Argenson..  | " 19     | .....     | 1         | .....   | " " hydrant valve.....           | Old one worn out.              |
| Albert cor. Fulford .....        | " 19     | .....     | 1         | .....   | " " " .....                      | " " abandoned.                 |
| Sherbrooke cor. Aylmer.....      | " 20     | .....     | 1         | .....   | " " " valve .....                | " " worn out.                  |
| Opp. 44 Aylmer.....              | " 20     | 4" .....  | ..        | .....   | Recaulked joint.....             | Joint blown out by pressure.   |
| Craig cor. Wolfe.....            | " 21     | .....     | 1         | .....   | Put in a new hydrant valve.....  | Old one worn out.              |
| Vitre cor. Cadieux .....         | " 21     | .....     | 1         | .....   | " " " .....                      | " " "                          |
| Coursol east Dominion.....       | " 22     | .....     | 1         | .....   | " " " .....                      | " " "                          |
| 1013 St. James.....              | " 22     | 4" .....  | ..        | .....   | Recaulked joint.....             | Joint blown out by pressure.   |
| Colborne cor. Wellington .....   | " 22     | 4" .....  | ..        | .....   | " " .....                        | " " "                          |
| Fort cor. St. Catherine.....     | " 23     | .....     | 1         | .....   | Put in a new valve .....         | Old one worn out.              |
| Opp. 24 Capital st.....          | " 25     | 4" .....  | ..        | .....   | Recaulked joint.....             | Joint blown out by pressure.   |
| St. Lawr'ce opp. St. Lawr'ce Mkt | " 27     | .....     | 1         | .....   | Put in a new hydrant valve ..... | Old one worn out.              |
| Champ de Mars cor. Bonsecours    | " 27     | 4" .....  | ..        | .....   | " " valve .....                  | " " "                          |
| Ann st. south of Brennan .....   | " 27     | 4" .....  | ..        | .....   | Recaulked joint.....             | Joint blown out by pressure.   |
| Cadieux st. below Vitre.....     | " 28     | .....     | 1         | .....   | Put in a new hydrant valve ..... | Old one worn out.              |
| Notre Dame cor. Bonsecours ..... | " 29     | .....     | 4         | .....   | Repacked valve .....             | Packing worn out.              |
| Dorchester cor. Bronson's Lane . | " 29     | .....     | 4         | .....   | " " .....                        | " " "                          |
| Notre Dame cor. Wood Yard.....   | " 30     | .....     | 1         | .....   | Repaired hydrant rod .....       | Rod broken by rough usage      |
| Opp. 35 Rushbrooke.. .....       | " 30     | .....     | 1         | .....   | Put in a new hydrant valve ..... | Old one worn out.              |
| " 35 " .....                     | " 30     | .....     | 1         | .....   | " " tile drain .....             | " " broke.                     |
| Guy above St. James.....         | " 30     | 4" .....  | ..        | .....   | Recaulked joint.....             | Joint blown out by pressure.   |
| Belmont cor Beaver Hall .....    | Oct. 2   | .....     | 1         | .....   | Put in a new hydrant valve ..... | Old one worn out.              |
| Logan cor. Dufresne st.....      | " 3      | .....     | 1         | .....   | " " " .....                      | " " "                          |
| Richmond cor. Grand Trunk .....  | " 3      | .....     | 1         | .....   | " " " .....                      | " " "                          |

| Locality and Municipality      | No. | Size | Description                | Remarks                      |
|--------------------------------|-----|------|----------------------------|------------------------------|
| cor. Richmond                  | 5   | 3"   | Put in new hydrant valve   | Old one decayed.             |
| Lindsay cor. Notre Dame        | 6   | 3"   | "                          | worn out.                    |
| Cadieux above Legauchetière    | 9   | 3"   | "                          | split.                       |
| Musbrooke st.                  | 10  | 3"   | valve                      | worn out.                    |
| McCord and Ottawa              | 10  | 3"   | "                          | "                            |
| Peel 1st above Sherbrooke      | 11  | 3"   | "                          | "                            |
| Notre Dame cor. Wolfe          | 12  | 3"   | "                          | "                            |
| St. Justin cor. St. Catherine  | 12  | 4"   | in a new spindle           | Old spindle broken.          |
| King st. south Wellington      | 13  | 4"   | on iron band               | Sand hole in pipe.           |
| Charlevoix cor. Rozel          | 14  | 3"   | in a new hydrant valve     | Old one worn out.            |
| Parthenais 1st above Ontario   | 14  | 3"   | "                          | "                            |
| Opp. 477 St. Lawrence          | 14  | 10"  | Recalked joint             | Joint blown out by pressure. |
| " 88 Chenneville               | 17  | 4"   | Put in a new piece of pipe | Pipe broken by old age.      |
| McGill cor. Notre Dame         | 18  | 3"   | " valve                    | Old one worn out.            |
| Cor. William and Ottawa        | 19  | 3"   | hydrant valve              | "                            |
| McTavish cor. Sherbrooke       | 20  | 3"   | "                          | "                            |
| Chenneville near Dorchester    | 20  | 3"   | "                          | "                            |
| Grand Trunk and Richmond       | 21  | 6"   | piece of pipe              | Pipe split by pressure.      |
| St. Felix cor. St. James       | 21  | 3"   | hydrant valve              | Old one worn out.            |
| Little St. Antoine             | 21  | 3"   | "                          | "                            |
| Ontario cor. Maisonneuve       | 23  | 3"   | "                          | "                            |
| McGill cor. Notre Dame         | 23  | 3"   | "                          | "                            |
| " " St. Paul                   | 24  | 3"   | another hydrant            | Brasses broken.              |
| Opp. 14 Farm st.               | 24  | 4"   | Recalked joint             | Joint blown out by pressure. |
| Papineau Ave above Ontario     | 25  | 3"   | Put in a new hydrant valve | Old one worn out.            |
| Seigneurs cor. St. James       | 25  | 3"   | "                          | "                            |
| St. Patrick cor. St. Etienne   | 26  | 3"   | "                          | "                            |
| St. Etienne opp G.T.R. offices | 26  | 3"   | "                          | "                            |
| Notre Dame cor. Wood Yard      | 27  | 3"   | "                          | "                            |
| St. Etienne opp Stock Yard     | 27  | 3"   | "                          | "                            |
| Opp. 109 Visitation            | 27  | 4"   | Recalked joint             | Joint blown out by pressure. |
| St. James cor. Cathedral       | 28  | 3"   | Put in a new hydrant valve | Old one worn out.            |
| Seigneurs cor. St. Antoine     | 28  | 3"   | "                          | "                            |



**Schedule No. 3a Cont'd.—Showing the Repairs done to Main Pipes, Hydrants and Valves during year 1893.**

[illegible]

|                                   |      |    |       |       |                                  |                              |
|-----------------------------------|------|----|-------|-------|----------------------------------|------------------------------|
| Opp. 2217 St. Catherine.....      | Nov. | 14 | 6"    | 1     | Recaulked joint .....            | Joint blown out by pressure. |
| Notre Dame cor. Versailles .....  | "    | 15 | ..... | 1     | Changed to a patent hydrant..... | Faper hydrant taken out.     |
| Colborne south Wellington.....    | "    | 16 | ..... | 1     | " " 3 nozzle " ..                | Old one taking out.          |
| Opp. 509 Grand Trunk st.....      | "    | 17 | ..... | 1     | Put in a new hydrant valve.....  | " worn out.                  |
| Conde and Centre .....            | "    | 17 | ..... | 4     | Valve reshipped.....             | Unshipped valve.             |
| Frontenac above Ontario .....     | "    | 18 | ..... | ..... | Put in new hydrant valve .....   | Old one worn out.            |
| Chatham below R. R. Track.....    | "    | 18 | ..... | 1     | Put in a new hydrant .....       | " no use.                    |
| Colborne cor. Wellington .....    | "    | 18 | ..... | 6     | Repacked stuffing box .....      | Stuffing box worn out.       |
| Craig cor. St. Hubert.....        | "    | 20 | ..... | 1     | Put in a new hydrant valve. .... | Old one worn out.            |
| McTavish cor. Sherbrooke.....     | "    | 20 | 20"   | ..... | Joint recaulked .....            | Joint blown out by pressure. |
| Duke and William .....            | "    | 20 | ..... | 6     | Taking out valve .....           | Old valve useless .....      |
| Sherbrooke cor. St. Dominique ..  | "    | 21 | ..... | 1     | Put in a new hydrant valve.....  | " one worn out.              |
| Dorchester cor. Beaudry.....      | "    | 22 | ..... | 1     | " " " .....                      | " " "                        |
| " " Windsor .....                 | "    | 22 | ..... | 4     | Repacked valve .....             | " packing worn out.          |
| St. Etienne and St. Patrick.....  | "    | 22 | ..... | 6     | Put in new valve .....           | " one worn out.              |
| Inspector cor. St. Antoine .....  | "    | 23 | ..... | 1     | " " hydrant valve.....           | " " "                        |
| Peel near Pine Ave.....           | "    | 24 | ..... | 1     | " a new rod .....                | " one broken.                |
| Opp. 26 St. James .....           | "    | 24 | 4"    | ..... | Recaulked joint.....             | Joint blown out.             |
| St. Dominique cor. Napoleon.....  | "    | 24 | ..... | 4     | Put in a new valve .....         | Old one broken.              |
| St. Catherine cor. Bishop .....   | "    | 25 | ..... | 1     | " " hydrant valve.....           | " worn out.                  |
| Bloury above Dorchester st.....   | "    | 25 | ..... | 1     | " " " .....                      | " " "                        |
| Lagauchetière cor. Alexander ...  | "    | 27 | ..... | 1     | " " " .....                      | " " "                        |
| Opp. 86 Shearer .....             | "    | 27 | 6"    | ..... | " " piece. ....                  | Pipe broken by age.          |
| Aqueduct near Dorchester.....     | "    | 27 | 4"    | ..... | Recaulked joint.....             | Joint blown out by pressure. |
| Peel st. near Pine Ave .....      | "    | 28 | ..... | 1     | Put in a new hydrant valve.....  | Old one worn out.            |
| Parthenais st. cor. Ontario ..... | "    | 28 | ..... | 1     | " " " .....                      | " " "                        |
| Dorchester west Bleury.....       | "    | 28 | 10"   | ..... | Recaulked joint .....            | Joint blown out by pressure. |
| Plessis cor. Logan.....           | "    | 29 | ..... | 1     | Put in a new hydrant valve.....  | Old one worn out.            |
| Cadieux above Roy st.....         | "    | 29 | 16"   | ..... | " new length 16" pipe .....      | Defective pipe.              |
| St. Bernard cor. Bleury.....      | "    | 29 | ..... | 4     | Repacked valve.....              | Packing worn out.            |
| Colborne near Wellington.....     | "    | 29 | 6"    | ..... | Recaulked joint .....            | Joint blown out by pressure. |
| Laval Ave 1st above Rachel .....  | "    | 30 | ..... | ..... | Put in a new valve .....         | Old one worn out.            |
| Commissioners cor. J.-Cartier sq. | "    | 30 | 6"    | ..... | Recaulked joint.....             | Joint blown out by pressure. |
| Opp. 143 St. Dominique .....      | "    | 30 | 4"    | ..... | Put in a new piece of pipe.....  | Pipe burst from old age.     |
| Hutchison cor. Prince Arthur ...  | Dec  | 1  | ..... | 1     | " " hydrant valve .....          | Old one worn out.            |

**Schedule No 8a Cont'd—Showing the Repairs done to Main Pipes, Hydrants and Valves during year 1898.**

[illegible]



**SCHEDULE No 9—SHOWING THE DIFFERENT KINDS AND SIZES  
OF METERS BELONGING TO THE CITY AND TO PRIVATE  
PARTIES FOR THE YEAR 1893.**

| Kinds.         | Sizes in inches. | Property of the City. |                   |                    |        | Private property. |                   |                   |        |              |
|----------------|------------------|-----------------------|-------------------|--------------------|--------|-------------------|-------------------|-------------------|--------|--------------|
|                |                  | In the City.          | Outside the City. | At the work Shops. | Total. | In the City.      | Outside the City. | At the work Shop. | Total. | Grand total. |
| Gem.....       | 10               | .....                 | .....             | 2                  | 2      | .....             | .....             | .....             | .....  | 2            |
| ".....         | 6                | 4                     | 1                 | 1                  | 6      | ■                 | .....             | .....             | 4      | 10           |
| ".....         | 4                | 17                    | .....             | 6                  | 23     | 5                 | .....             | .....             | 5      | 28           |
| ".....         | 3                | 68                    | .....             | 5                  | 73     | 9                 | .....             | .....             | 9      | 82           |
| ".....         | 2                | 29                    | .....             | 3                  | 32     | 5                 | .....             | .....             | 5      | 37           |
| ".....         | 1½               | 6                     | .....             | 4                  | 10     | 2                 | .....             | .....             | 2      | 12           |
| Union.....     | 5                | .....                 | .....             | .....              | .....  | 1                 | .....             | .....             | 1      | 1            |
| ".....         | 1                | 7                     | .....             | 9                  | 16     | .....             | .....             | .....             | .....  | 16           |
| ".....         | ½                | 16                    | .....             | 14                 | 30     | 2                 | .....             | .....             | 2      | 32           |
| Rotary Union.. | 1½               | 2                     | .....             | .....              | 2      | .....             | .....             | .....             | .....  | 2            |
| Crown.....     | 6                | 2                     | .....             | .....              | 2      | 3                 | 2                 | .....             | 5      | 7            |
| ".....         | 4                | 19                    | 1                 | 1                  | 21     | ■                 | .....             | .....             | 6      | 27           |
| ".....         | 3                | 23                    | 1                 | .....              | 24     | 3                 | .....             | .....             | 3      | 27           |
| ".....         | 2                | 23                    | 2                 | .....              | 25     | 5                 | .....             | .....             | 5      | 30           |
| ".....         | 1½               | 21                    | .....             | 1                  | 22     | 3                 | .....             | .....             | 3      | 25           |
| ".....         | 1                | 47                    | .....             | 3                  | 50     | 5                 | .....             | .....             | 5      | 55           |
| ".....         | ¾                | 41                    | .....             | 7                  | 48     | 5                 | .....             | .....             | 5      | 53           |
| ".....         | ¾                | 117                   | .....             | 11                 | 128    | 4                 | .....             | .....             | 4      | 132          |
| Empire.....    | 1                | 10                    | .....             | .....              | 10     | .....             | .....             | .....             | .....  | 10           |
| ".....         | 1                | 30                    | .....             | 6                  | 36     | 1                 | .....             | .....             | 1      | 37           |
| ".....         | ¾                | 6                     | .....             | .....              | 6      | .....             | .....             | .....             | .....  | 6            |
| ".....         | ¾                | 81                    | .....             | 3                  | 84     | .....             | .....             | .....             | .....  | 84           |
| Worthington .. | ¾                | .....                 | .....             | .....              | .....  | 1                 | .....             | .....             | 1      | 1            |
| ".....         | 3                | 1                     | .....             | 1                  | 2      | .....             | .....             | .....             | .....  | 2            |
| ".....         | 2                | 10                    | .....             | .....              | 10     | 5                 | .....             | .....             | 5      | 15           |
| ".....         | 1½               | 13                    | .....             | .....              | 13     | 1                 | .....             | .....             | 1      | 14           |
| ".....         | 1                | 38                    | 1                 | 9                  | 48     | .....             | .....             | .....             | .....  | 48           |
| ".....         | ¾                | 61                    | .....             | 1                  | 62     | 3                 | .....             | .....             | 3      | 65           |
| Hersey.....    | 1                | .....                 | .....             | 2                  | .....  | .....             | .....             | .....             | .....  | 2            |
| ".....         | ¾                | 5                     | .....             | 5                  | 10     | .....             | .....             | .....             | .....  | 10           |
|                |                  | 698                   | 6                 | 94                 | 798    | 73                | 2                 | 0                 | 75     | 873          |



Gen.

Unio

Rotary  
Grow

Empire.

Worthin

Hersey ....

St Ann's War

Darré  
Basta







|                  |      |     |      |      |      |      |      |      |      |      |      |      |      |
|------------------|------|-----|------|------|------|------|------|------|------|------|------|------|------|
| St. James        | 904  | 3   | 1949 | 49   | 368  | 4598 | 6    | 19   | 1    | 6    | 25   | 15   | 286  |
| Sherbrooke       | 1001 | 17  | 1001 | 1001 | 1001 | 1001 | 1001 | 1001 | 1001 | 1001 | 1001 | 1001 | 1001 |
| Seymour Avenue   | 54   | 342 | 54   | 342  | 54   | 342  | 54   | 342  | 54   | 342  | 54   | 342  | 54   |
| Summerhill       | 63   | 63  | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   |
| Bouvenir         | 63   | 63  | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   |
| St. Antoine      | 63   | 63  | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   |
| St. Catherine    | 63   | 63  | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   |
| St. James        | 63   | 63  | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   |
| St. Matthew      | 63   | 63  | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   |
| St. Michael Lane | 63   | 63  | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   |
| Stanley          | 63   | 63  | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   |
| Union Avenue     | 63   | 63  | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   |
| University       | 63   | 63  | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   |
| Vernaillet       | 63   | 63  | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   |
| Victoria Square  | 63   | 63  | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   |
| Windsor          | 63   | 63  | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   |
| Jurors           | 63   | 63  | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   |
| Woodstock        | 63   | 63  | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   |
| St. Martin       | 63   | 63  | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   |
| Belgians         | 63   | 63  | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   | 63   |
| Carried          | 2048 | 9   | 919  | 48   | 134  | 2808 | 4    | 5    | 2    | 5    | 16   | 6    | 134  |

## St. Lawrence Ward.

|               |      |    |     |    |     |      |   |    |   |    |    |    |     |
|---------------|------|----|-----|----|-----|------|---|----|---|----|----|----|-----|
| Anderson      | 3    | 28 | 3   | 28 | 3   | 28   | 3 | 28 | 3 | 28 | 3  | 28 | 3   |
| Arcade        | 3    | 28 | 3   | 28 | 3   | 28   | 3 | 28 | 3 | 28 | 3  | 28 | 3   |
| Berthelet     | 3    | 28 | 3   | 28 | 3   | 28   | 3 | 28 | 3 | 28 | 3  | 28 | 3   |
| Blair         | 3    | 28 | 3   | 28 | 3   | 28   | 3 | 28 | 3 | 28 | 3  | 28 | 3   |
| Cheneyville   | 3    | 28 | 3   | 28 | 3   | 28   | 3 | 28 | 3 | 28 | 3  | 28 | 3   |
| Church        | 3    | 28 | 3   | 28 | 3   | 28   | 3 | 28 | 3 | 28 | 3  | 28 | 3   |
| Cotté         | 3    | 28 | 3   | 28 | 3   | 28   | 3 | 28 | 3 | 28 | 3  | 28 | 3   |
| Dorchester    | 3    | 28 | 3   | 28 | 3   | 28   | 3 | 28 | 3 | 28 | 3  | 28 | 3   |
| Durocher      | 3    | 28 | 3   | 28 | 3   | 28   | 3 | 28 | 3 | 28 | 3  | 28 | 3   |
| Gallant       | 3    | 28 | 3   | 28 | 3   | 28   | 3 | 28 | 3 | 28 | 3  | 28 | 3   |
| Hutchinson    | 3    | 28 | 3   | 28 | 3   | 28   | 3 | 28 | 3 | 28 | 3  | 28 | 3   |
| Lagachetiere  | 3    | 28 | 3   | 28 | 3   | 28   | 3 | 28 | 3 | 28 | 3  | 28 | 3   |
| Mabee         | 3    | 28 | 3   | 28 | 3   | 28   | 3 | 28 | 3 | 28 | 3  | 28 | 3   |
| Milton        | 3    | 28 | 3   | 28 | 3   | 28   | 3 | 28 | 3 | 28 | 3  | 28 | 3   |
| Ontario       | 3    | 28 | 3   | 28 | 3   | 28   | 3 | 28 | 3 | 28 | 3  | 28 | 3   |
| Park Avenue   | 3    | 28 | 3   | 28 | 3   | 28   | 3 | 28 | 3 | 28 | 3  | 28 | 3   |
| Sherbrooke    | 3    | 28 | 3   | 28 | 3   | 28   | 3 | 28 | 3 | 28 | 3  | 28 | 3   |
| St. Alexander | 3    | 28 | 3   | 28 | 3   | 28   | 3 | 28 | 3 | 28 | 3  | 28 | 3   |
| Carried       | 2048 | 9  | 919 | 48 | 134 | 2808 | 4 | 5  | 2 | 5  | 16 | 6  | 134 |

| PAIN IN SPINE |       |          |           |          |        |           |          |         |           |
|---------------|-------|----------|-----------|----------|--------|-----------|----------|---------|-----------|
| DATE          | TIME  | LOCATION | CHARACTER | SEVERITY | CAUSE  | TREATMENT | RESPONSE | REMARKS | PHYSICIAN |
| 10/1/77       | 10:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/2/77       | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/3/77       | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/4/77       | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/5/77       | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/6/77       | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/7/77       | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/8/77       | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/9/77       | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/10/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/11/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/12/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/13/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/14/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/15/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/16/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/17/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/18/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/19/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/20/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/21/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/22/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/23/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/24/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/25/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/26/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/27/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/28/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/29/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/30/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |
| 10/31/77      | 11:00 | LOW BACK | ACHING    | 4        | STRESS | REST      | GOOD     |         |           |

| Notre-Dame             | 1427 | 20 | 13   | 1808 | 45   | 122   | 3384 | 1    | 1 | 1  | 11 | 3  | 16 | 7  | 55  |
|------------------------|------|----|------|------|------|-------|------|------|---|----|----|----|----|----|-----|
| Ontario                |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 1   |
| Perthshire             |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 3   |
| Beauséjour             |      |    | 320  |      |      |       | 1200 |      |   |    |    |    |    |    | 3   |
| Boy                    |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 6   |
| Rivard                 |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 13  |
| Sherbrooke             |      |    | 1093 | 33   |      |       | 1726 |      |   |    |    |    |    |    | 9   |
| St. André              |      |    | 120  | 50   |      |       | 182  |      |   |    |    |    |    |    | 20  |
| St. Catherine          |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 12  |
| St. Christophe         |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 4   |
| St. Denis              |      |    |      | 43   |      |       | 43   |      |   |    |    |    |    |    | 45  |
| St. Hubert             |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 13  |
| St. Louis              |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 5   |
| Visitation             |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 32  |
| Wolfe                  |      |    |      | 63   |      |       | 79   |      |   |    |    |    |    |    | 8   |
| Jacq.-Cartier          |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 25  |
| Ernest                 |      |    | 34   | 7    |      |       | 41   |      |   |    |    |    |    |    | 1   |
| Lacroix                |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 1   |
| Robillard              |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 12  |
|                        | 1427 | 20 | 3457 | 500  | 2188 | 86    | 39   | 6008 | 1 | 1  | 11 | 3  | 36 | 20 | 404 |
| <b>St. Louis Ward.</b> |      |    |      |      |      |       |      |      |   |    |    |    |    |    |     |
| Albion                 |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 1   |
| Cadieux                |      |    | 4066 | 13   | 259  | 6     | 43   | 4327 |   |    | 11 | 8  | 22 | 11 | 56  |
| Côté Lane              |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 3   |
| Drolet                 |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 20  |
| Dubord                 |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 4   |
| German                 |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 7   |
| Lagauchetière          |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 2   |
| Laval Ave.             |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 6   |
| Napoléon               |      |    |      | 1    | 24   | 3     | 27   |      |   |    | 1  |    | 1  |    | 26  |
| Pantaléon              |      |    |      | 80   | 2455 | 30    | 2830 |      |   |    | 2  | 1  | 6  | 2  | 8   |
| Pine Avenue            |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 3   |
| Boy                    |      |    | 61   | 36   |      |       | 59   |      |   |    |    |    |    |    | 19  |
| Banguinet              |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 5   |
| Sherbrooke             |      |    | 2410 |      | 18   | 16    | 2408 |      |   |    |    | 1  | 3  | 6  | 5   |
| St. Catherine          |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 4   |
| St. Denis              |      |    |      |      | 86   |       | 68   |      |   |    |    |    |    |    | 32  |
| St. Dominique          |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 6   |
| St. Elizabeth          |      |    |      |      |      |       |      |      |   |    |    |    |    |    | 23  |
| St. Hypolite           |      |    | 1879 |      | 69   | 69    | 2100 |      |   |    |    |    |    |    | 9   |
| St. Lawrence           |      |    |      |      |      |       |      |      |   |    |    |    |    |    | ... |
| Carried over           | 8028 | 63 | 2690 | 80   | 130  | 11649 |      |      |   | 17 | 5  | 12 | 40 | 34 | 285 |

SCHEDULE No. 10.—SHOWING THE PIPES, &c.—Continued.

| NAME OF STREETS             | Length in feet of cast iron pipes. |     |     |      |     |      |     | No. of Valves. |     |     |     |    |    |    | Hydrants. | Houses Supplied. |
|-----------------------------|------------------------------------|-----|-----|------|-----|------|-----|----------------|-----|-----|-----|----|----|----|-----------|------------------|
|                             | Total.                             |     |     |      |     |      |     | Total.         |     |     |     |    |    |    |           |                  |
|                             | 24"                                | 20" | 16" | 12"  | 10" | 8"   | 6"  | 20"            | 18" | 12" | 10" | 8" | 6" | 4" |           |                  |
| St. Louis Ward—Continued.   |                                    |     |     |      |     |      |     |                |     |     |     |    |    |    |           |                  |
| Brought forward . . . . .   |                                    |     |     | 8525 | 83  | 2283 | 36  | 183            |     |     |     |    |    |    | 40        | 25               |
| St. Hypolite Lane . . . . . |                                    |     |     |      |     |      |     |                |     |     |     |    |    |    | 1         | 3                |
| De Montigny . . . . .       |                                    |     |     |      |     |      | 106 |                |     |     |     | 1  |    |    |           | 3                |
| Picard Lane . . . . .       |                                    |     |     |      |     |      |     |                |     |     |     |    |    |    |           | 1                |
| Vitré . . . . .             |                                    |     |     |      |     |      | 10  |                |     |     |     |    |    |    |           |                  |
| St. Mary's Ward.            |                                    |     |     |      |     |      |     |                |     |     |     |    |    |    |           |                  |
| Amity . . . . .             |                                    |     |     | 8525 |     | 2403 | 382 | 183            |     |     |     |    |    |    | 41        | 201              |
| ChAMPLAIN . . . . .         |                                    |     |     |      | 3   |      | 80  | 3              |     |     |     |    |    | 1  |           | 18               |
| LeLORIMER . . . . .         |                                    |     |     |      |     |      |     |                |     |     |     | 1  |    |    |           | 19               |
| DORCHESTER . . . . .        |                                    |     |     |      |     |      |     | 22             |     |     |     |    |    | 1  |           | 4                |
| DUFRESNE . . . . .          |                                    |     |     | 92   |     |      |     |                |     |     |     |    |    |    |           | 6                |
| FULUM . . . . .             |                                    |     |     | 26   |     | 4    |     | 2              |     |     |     |    |    |    |           | 29               |
| GAIN . . . . .              |                                    |     |     |      |     |      |     |                |     |     |     |    |    |    |           | 8                |
| GRANT . . . . .             |                                    |     |     |      |     |      |     |                |     |     |     |    |    |    |           | 1                |
| HARMONY . . . . .           |                                    |     |     |      |     | 251  |     | 2              |     |     |     |    |    |    |           | 1                |
| IBERVILLE . . . . .         |                                    |     |     |      |     |      |     |                |     |     |     |    |    |    |           | 6                |
| LEFONTAINE . . . . .        |                                    |     |     |      |     |      |     |                |     |     |     |    |    |    |           | 11               |
| LOGAN . . . . .             |                                    |     |     |      |     |      |     |                |     |     |     |    |    |    |           | 3                |
| MAISONNEUVE . . . . .       |                                    |     |     |      |     |      |     |                |     |     |     |    |    |    |           | 51               |
| MATTHEU LANE . . . . .      |                                    |     |     |      |     |      |     |                |     |     |     |    |    |    |           | 6                |
| MIGNONNE . . . . .          |                                    |     |     | 398  |     | 78   |     | 4              |     |     |     | 2  |    |    |           | 10               |
| NELLEDA . . . . .           |                                    |     |     |      |     |      |     |                |     |     |     |    |    |    |           | 3                |
| NOTRE-DAME . . . . .        |                                    |     |     |      | 43  | 1834 | 29  | 71             |     |     |     |    |    |    |           | 51               |
| ONTARIO . . . . .           | 1250                               |     |     |      |     |      |     |                |     |     |     | 1  | 30 |    | 24        | 13               |
| PANET . . . . .             |                                    |     |     |      |     |      |     |                |     |     |     |    |    |    |           | 7                |
| PAPINEAU AVENUE . . . . .   |                                    |     |     |      |     |      |     |                |     |     |     |    |    |    |           | 6                |
| PARKER . . . . .            |                                    |     |     |      |     |      |     |                |     |     |     |    |    |    |           | 6                |
| PARTHENAIS . . . . .        |                                    |     |     |      |     |      |     |                |     |     |     |    |    |    |           | 1                |
| PLEASANT . . . . .          |                                    |     |     |      |     |      | 80  | 4              |     |     |     |    |    |    |           | 1                |

|                                |      |    |      |     |     |      |     |     |      |    |    |    |    |    |    |    |    |     |    |
|--------------------------------|------|----|------|-----|-----|------|-----|-----|------|----|----|----|----|----|----|----|----|-----|----|
| Ponpart.....                   | 38   | 86 | 9585 | 38  | 105 | 4707 | 305 | 199 | 7107 | 1  | 4  | 2  | 25 | 2  | 9  | 46 | 16 | 207 | 19 |
| Khaw .....                     | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | 19 |
| St. Adolphe .....              | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | 1  |
| St. Catherine .....            | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | 1  |
| St. Roch Lane .....            | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | 4  |
| Visitation .....               | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | 5  |
| Jean Lane .....                | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | 1  |
| St. Elizabeth Lane .....       | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | 3  |
| Fullum Lane .....              | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | 4  |
| <b>St. Jean-Baptiste Ward.</b> |      |    |      |     |     |      |     |     |      |    |    |    |    |    |    |    |    |     |    |
| Amherst .....                  | 1286 | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Berri Lane .....               | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Boyer .....                    | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Brebenf .....                  | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Cadienx .....                  | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Drolet .....                   | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Durham .....                   | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Dufferin .....                 | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Duluth Avenue .....            | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Laval Avenue .....             | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Maple .....                    | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Michison .....                 | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Montana .....                  | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Marianna .....                 | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Mount Royal Avenue .....       | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Paget .....                    | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Pantaléon .....                | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Papineau Avenue .....          | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Rachel .....                   | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Rivard .....                   | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Sanguinet .....                | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Senon .....                    | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| St. André .....                | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| St. Denis .....                | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| St. Dominique .....            | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| St. Lawrence .....             | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| St. Urbain .....               | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Berri .....                    | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| Chambord .....                 | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| St. Hubert .....               | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
| St. Hypolite .....             | ..   | .. | ..   | ..  | ..  | ..   | ..  | ..  | ..   | .. | .. | .. | .. | .. | .. | .. | .. | ..  | .. |
|                                | 4148 | .. | 4895 | 106 | 50  | 8042 | ..  | ..  | ..   | .. | 7  | .. | 7  | .. | .. | 10 | 17 | 393 | .. |







SCHEDULE No. 10—SHOWING THE PIPES, &c.—Continued.

|                   | Length in feet of cast iron pipes |    |     |     | No. of valves |      |     |     |      |   |   |   |    |    |    |    |     |         |
|-------------------|-----------------------------------|----|-----|-----|---------------|------|-----|-----|------|---|---|---|----|----|----|----|-----|---------|
| St. Louis         | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Charles       | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Joseph        | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Mary          | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Jean Baptiste | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Charles       | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Joseph        | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Mary          | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Jean Baptiste | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Charles       | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Joseph        | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Mary          | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Jean Baptiste | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Charles       | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Joseph        | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Mary          | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Jean Baptiste | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Charles       | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Joseph        | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Mary          | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Jean Baptiste | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Charles       | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Joseph        | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Mary          | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Jean Baptiste | 1427                              | 20 | 227 | 238 | 1070          | 2120 | 865 | 120 | 4480 | 1 | 1 | 9 | 04 | 10 | 13 | 47 | 200 | 1505600 |
| St. Charles       | 1427                              | 20 | 227 | 238 |               |      |     |     |      |   |   |   |    |    |    |    |     |         |

**Schedule No. 11—showing the Pipes, Hydrants and Valves laid down and the number of Houses supplied with water in the City of Montreal up to 1st January 1894.**

| WARDS.   | MAIN PIPES |       |       |       |        |        |       |        |        |      |        |         |     | VALVES. |     |     |     |     |     |     |     |     |        |       |        |  | Hydraulic | Feet | Feet | Feet |
|--|------------|-------|-------|-------|--------|--------|-------|--------|--------|------|--------|---------|-----|---------|-----|-----|-----|-----|-----|-----|-----|-----|--------|-------|--------|--|-----------|------|------|------|
|  | 30"        | 24"   | 20"   | 18"   | 12"    | 10"    | 8"    | 6"     | 4"     | 3"   | 1 1/2" | TOTAL   | 30" | 24"     | 20" | 18" | 12" | 10" | 8"  | 6"  | 4"  | 3"  | 1 1/2" | Total |        |  |           |      |      |      |
| East .....   | ...        | 2467  | ...   | 427   | 3019   | 6014   | 915   | 2466   | 6437   | 713  | 80     | 22517   | ... | 1       | ... | 2   | 9   | 11  | 14  | 16  | 41  | 2   | ...    | 96    | 54     |  |           |      |      |      |
| Center .....   | ...        | 3086  | ...   | ...   | 2377   | 4120   | 280   | 3504   | 6668   | 141  | 36     | 19244   | ... | 2       | ... | ... | 4   | 10  | 6   | 16  | 37  | 7   | ...    | 84    | 35     |  |           |      |      |      |
| West .....   | ...        | 1490  | ...   | 654   | 3076   | 7808   | 1052  | 5751   | 7115   | 585  | ...    | 27534   | ... | ...     | ... | ... | 8   | 21  | 8   | 17  | 45  | 18  | ...    | 110   | 54     |  |           |      |      |      |
| St Ann .....   | ...        | 4716  | 278   | ...   | 27375  | 2577   | 9622  | 20468  | 49674  | 54   | ...    | 135423  | ... | ...     | ... | 1   | 46  | 47  | 41  | 75  | 120 | 3   | ...    | 947   | 244    |  |           |      |      |      |
| St. Antoine  | 1351       | 5492  | 3850  | 4860  | 67397  | 17914  | 11251 | 44210  | 104684 | 823  | 3      | 261724  | 1   | 4       | 6   | 114 | 44  | 46  | 76  | 117 | 257 | 5   | ...    | 632   | 437    |  |           |      |      |      |
| St Lawrence.   | 2240       | 4015  | 3912  | ...   | 22065  | 8492   | 6964  | 24115  | 22657  | ...  | ...    | 83062   | 1   | 3       | ... | ... | 41  | 20  | 45  | 68  | 88  | 1   | ...    | 268   | 171    |  |           |      |      |      |
| St. Louis ..   | 1640       | 36    | 1516  | 1848  | 23387  | 12532  | 7697  | 21472  | 32939  | ...  | ...    | 103072  | 1   | 1       | 2   | 49  | 39  | 36  | 48  | 60  | ... | ... | 251    | 197   |        |  |           |      |      |      |
| St. James ..   | 2865       | 1497  | 4370  | 1074  | 17852  | 8311   | 21063 | 29845  | 36811  | ...  | ...    | 123458  | 1   | 1       | 3   | 1   | 39  | 20  | 52  | 83  | 95  | ... | 206    | 236   |        |  |           |      |      |      |
| St. Mary ..  | 2565       | 5944  | ...   | 140   | 13198  | 18164  | 14671 | 47719  | 32505  | 60   | ...    | 139235  | 1   | 5       | ... | 1   | 40  | 29  | 45  | 116 | 120 | 1   | ...    | 238   | 241    |  |           |      |      |      |
| St. Jean Be  | ...        | ...   | ...   | 302   | 20252  | 360    | 12148 | 37077  | 65     | ...  | ...    | 60105   | ... | ...     | ... | ... | 31  | 19  | 41  | 4   | ... | ... | 85     | 128   |        |  |           |      |      |      |
| Hotelaga   | ...        | 3674  | ...   | 1951  | 19947  | 8576   | 8334  | 13778  | 16167  | ...  | ...    | 66414   | ... | 1       | ... | ... | 26  | 9   | 18  | 33  | 30  | ... | 122    | 113   |        |  |           |      |      |      |
| St. Gabriel.   | 117        | 2178  | ...   | ...   | 535    | 26     | 5043  | 7416   | 517    | ...  | ...    | 15737   | ... | 3       | ... | ... | 9   | 2   | 14  | 10  | 13  | ... | 51     | 47    |        |  |           |      |      |      |
| St Denis.  | ...        | ...   | ...   | ...   | ...    | ...    | ...   | ...    | ...    | ...  | ...    | ...     | ... | ...     | ... | ... | ... | ... | ... | ... | ... | ... | ...    | ...   | ...    |  |           |      |      |      |
| Total ..   | 10698      | 36725 | 13036 | 11072 | 219385 | 118305 | 90093 | 246810 | 316490 | 2000 | 507    | 1071226 | 5   | 25      | 11  | 14  | 416 | 246 | 370 | 641 | 925 | 35  | ...    | 12895 | 109538 |  |           |      |      |      |
| Blasing Main   | 16102      | 27709 | ...   | ...   | 1674   | ...    | ...   | 15     | ...    | ...  | ...    | 45500   | 13  | 24      | ... | 1   | 2   | ... | ... | 2   | ... | ... | ...    | 42    | ...    |  |           |      |      |      |
| Exh Grounds  | ...        | ...   | ...   | ...   | ...    | ...    | ...   | 6484   | ...    | ...  | ...    | 5484    | ... | ...     | ... | ... | ... | ... | ... | ... | ... | ... | ...    | ...   | ...    |  |           |      |      |      |
| G.T.R. P.St C  | ...        | ...   | ...   | ...   | ...    | ...    | ...   | 7737   | 1861   | ...  | ...    | 9595    | ... | ...     | ... | ... | ... | ... | ... | ... | ... | ... | ...    | ...   | ...    |  |           |      |      |      |
| Grd Total  | 46000      | 64424 | 13036 | 11072 | 221058 | 118305 | 96095 | 254562 | 323844 | 2095 | 507    | 1151807 | 16  | 52      | 11  | 15  | 417 | 246 | 370 | 643 | 929 | 35  | ...    | 12740 | 109858 |  |           |      |      |      |
| Less, taken<br>out in 1893<br>or left in<br>ground use-<br>less. | ...        | ...   | ...   | ...   | ...    | ...    | ...   | 4800   | 13744  | ...  | ...    | 12344   | ... | ...     | ... | ... | ... | ... | ... | ... | ... | ... | ...    | 71    | 26     |  |           |      |      |      |
|  |            |       |       |       |        |        |       |        |        |      |        | 1112483 |     |         |     |     |     |     |     |     |     |     |        |       | 1971   |  |           |      |      |      |

Schedule No. 12—Showing the average pressure in City Mains during the year 1893.

| MONTHS.                | At W. W. Shop, Lagan-chetivore st., corner St. Chs. Bor. |  |   |  |  |  |                                       |                                      |                                       |   |   |   |  |  |  |  |        | Surface of water in McTavish Reservoir. |  |
|------------------------|--|--|---|--|--|--|---------------------------------------|--------------------------------------|---------------------------------------|---|---|---|--|--|--|--|--------|---|--|
|                        | Central Fire Station,<br>Craig Street.                   | Fire Station No. 2,<br>St. Gabriel Street. | Fire Station No. 3,<br>Wellington Street. | Fire Station No. 4,<br>Chaboillez Sqr. | Fire Station No. 5,<br>St. Catherine Street. | Fire Station No. 6,<br>Ontario Street. | Fire Station No. 7,<br>Dalhousie Sqr. | Fire Station No. 8,<br>Craig Street. | Fire Station No. 9,<br>Centre Street. | Fire Station No. 10,<br>St. Catherine Street. | Fire Station No. 11,<br>Ontario Street. | Fire Station No. 12,<br>Seigneurs Street. | Fire Station No. 13,<br>Desery Street. | Fire Station No. 14,<br>St. Dominique Street,<br>St. J. Bte. Ward. | Fire Station No. 15,<br>Hibernia Street. | Fire Station No. 16,<br>Rachel Street. | 205.   |   |  |
| Height<br>above datum. | 42   | 57   | 27.                                       | .....                                  | 97.  | 66                                     | 70.5                                  | 43.                                  | 26.                                   | 130.  | 70.                                     | 36.                                       | 44.                                    | 151.   | 22.                                      | 125.                                   | 205.   |   |  |
| January .....          | 70   | 66   | .....                                     | 80                                     | 59   | 63                                     | 58                                    | 73                                   | 82                                    | 31  | 57                                      | 78  | 76                                     | 112  | 80                                       | 30                                     | 203.55 |   |  |
| February .....         | 70   | 67   | 77  | 71                                     | 59   | 62                                     | 59                                    | 71                                   | 83                                    | 32  | 57                                      | 77  | 74                                     | 112  | 78                                       | 30                                     | 204.20 |   |  |
| March .....            | 70   | 66   | 79  | 73                                     | 60   | 62                                     | 58                                    | 71                                   | 73                                    | 34  | 57                                      | 75  | 74                                     | 110  | 76                                       | 30                                     | 204.73 |   |  |
| April .....            | 70   | 66   | 79  | 71                                     | 60   | 62                                     | 59                                    | 71                                   | 77                                    | 33  | 57                                      | 75  | .....                                  | 104  | 77                                       | 30                                     | 203.95 |   |  |
| May .....              | 70   | 67   | 80  | 76                                     | 60   | 62                                     | 59                                    | 71                                   | 78                                    | 34  | 58                                      | 80  | 53                                     | 101  | 78                                       | 30                                     | 204.49 |   |  |
| June .....             | 70   | 67   | 79  | 76                                     | 60   | 63                                     | 59                                    | 71                                   | 78                                    | 34  | 58                                      | 80  | 54                                     | 101  | 81                                       | 30                                     | 204.84 |   |  |
| July .....             | 70   | 67   | 79  | 79                                     | 60   | 62                                     | 59                                    | 71                                   | 77                                    | 34  | 57                                      | 80  | 51                                     | 101  | 83                                       | 30                                     | 202.53 |   |  |
| August .....           | 70   | 66   | 80  | 78                                     | 59   | 61                                     | 59                                    | 70                                   | 78                                    | 34  | 57                                      | 80  | 68                                     | 121  | 79                                       | 30                                     | 208.87 |   |  |
| September .....        | 70   | 66   | 80  | 75                                     | 59   | 62                                     | 60                                    | 71                                   | 77                                    | 34  | 57                                      | 80  | 69                                     | 105  | 80                                       | +112                                   | 204.11 |   |  |
| October .....          | 70   | 67   | 80  | 77                                     | 58   | 62                                     | 60                                    | 71                                   | 77                                    | 34  | 57                                      | 80  | 69                                     | 103  | 59                                       | 125                                    | 203.98 |   |  |
| November .....         | 70   | 62   | 79  | 76                                     | 64   | 61                                     | 61                                    | 71                                   | 80                                    | 34  | 57                                      | 80  | 68                                     | 102  | 66                                       | 125                                    | 203.28 |   |  |
| December .....         | 70   | 62   | 79  | 76                                     | 57   | 61                                     | 61                                    | 71                                   | 84                                    | 34  | 58                                      | 80  | 65                                     | 102  | 74                                       | 125                                    | 204.83 |   |  |
| verage 1893.....       | 70   | 65   | 79  | 75                                     | 59   | 62                                     | 59                                    | 71                                   | 79                                    | 33  | 57                                      | 79  | 66                                     | 106  | 76                                       | 60                                     | 203.99 |   |  |
| " 1892.....            | 70   | 66   | 79  | 80                                     | 49   | 64                                     | 58                                    | 71                                   | 82                                    | 31  | 60                                      | 77  | 75                                     | 112  | 80                                       | 30                                     | 203.86 |   |  |

+ No. 16 Fire Station now on high level.

## SCHEDULE No. 13.

SHOWING THE POSITION OF PUBLIC FOUNTAINS ERECTED IN THE CITY OF MONTREAL  
UP TO JANUARY 1894.

| No. | LOCATION.                                 | Cast Iron Basins. | Stone and Cement<br>Basins. | Stone Fountains. | Cast Iron<br>Fountains. | Wood<br>Fountains. | Cast Iron<br>Drinking Troughs. | Number of Jets. |
|-----|---|-------------------|-----------------------------|------------------|-------------------------|--------------------|--------------------------------|-----------------|
| 1   | Beaver Hall Square.....                   |                   |                             |                  | 1                       |                    |                                | 1               |
| 2   | Belle Rive Park.....                      | 1                 |                             |                  | 1                       |                    |                                | 2               |
| 3   | Bonsecours Market.....                    |                   |                             |                  |                         |                    |                                | 2               |
| 4   | Chaboillez Square.....                    |                   |                             |                  |                         |                    | 1                              |                 |
| 5   | Cherrier Square.....                      |                   |                             |                  | 2                       |                    |                                | 6               |
| 6   | Colborne at Flour Shed.....               |                   |                             |                  | 1                       |                    | 1                              | 2               |
| 7   | Court House Square.....                   | 2                 | 1                           | 2                |                         |                    |                                | 5               |
| 8   | Craig at Victoria Square.....             |                   |                             | 1                |                         |                    |                                | 2               |
| 9   | Craig opposite Drill Hall.....            |                   |                             |                  | 1                       |                    |                                | 1               |
| 10  | Custom House Square.....                  |                   |                             |                  | 1                       |                    |                                | 1               |
| 11  | Dorchester at Dominion Square.....        |                   |                             |                  | 1                       |                    |                                | 1               |
| 12  | Dufferin Square.....                      |                   |                             |                  | 1                       |                    |                                | 1               |
| 13  | Fulford near Notre-Dame.....              |                   |                             |                  | 1                       |                    |                                | 1               |
| 14  | Gulbault and St. Lawrence.....            |                   |                             |                  | 1                       |                    | 1                              | 1               |
| 15  | Jacques Cartier Square and St. Paul.....  | 1                 |                             |                  | 1                       |                    | 1                              | 5               |
| 16  | Inspector at Hay Market.....              |                   |                             |                  |                         |                    | 1                              | 1               |
| 17  | McTavish street opposite Reservoir.....   |                   |                             |                  | 1                       |                    |                                | 1               |
| 18  | McGill and Common.....                    |                   |                             | 1                |                         |                    |                                | 2               |
| 19  | Mill street at Waste Weir.....            |                   |                             |                  |                         | 1                  |                                | 2               |
| 20  | Mount-Royal Avenue.....                   |                   |                             |                  |                         |                    | 1                              | 1               |
| 21  | Notre-Dame near Ruisseau Migeon.....      |                   |                             |                  |                         |                    | 1                              | 1               |
| 22  | Notre-Dame and Poupart.....               |                   |                             |                  | 1                       |                    |                                | 1               |
| 23  | Ontario opposite Reformatory grounds..... |                   |                             |                  |                         | 1                  |                                | 2               |
| 24  | Ontario near Papineau.....                |                   |                             |                  |                         |                    | 1                              | 2               |
| 25  | Ottawa corner Dalhousie.....              |                   |                             |                  |                         |                    |                                | 3               |
| 26  | Papineau north of Sherbrooke.....         |                   |                             |                  |                         | 1                  |                                | 3               |
| 27  | Papineau Square.....                      |                   | 1                           |                  |                         | 1                  | 1                              | 7               |
| 28  | Park Avenue and Duluth.....               |                   |                             |                  |                         |                    |                                | 2               |
| 29  | Phillip's Square.....                     |                   |                             |                  | 1                       |                    |                                | 1               |
| 30  | Phillip's Square and St. Catherine.....   |                   |                             |                  |                         |                    |                                | 1               |
| 31  | Prince and Common.....                    |                   |                             |                  | 1                       |                    |                                | 2               |
| 32  | Rachel and Champlain.....                 |                   |                             |                  | 1                       |                    | 1                              | 1               |
| 33  | Richmond Square.....                      |                   |                             |                  | 1                       |                    |                                | 1               |
| 34  | Seigneurs and William.....                |                   |                             |                  |                         |                    |                                | 1               |
| 35  | Sherbrooke near Drummond.....             |                   | 1                           |                  |                         |                    |                                | 2               |
| 36  | Sherbrooke corner Guy.....                |                   | 1                           |                  |                         |                    |                                | 1               |
| 37  | St. Ann's Market.....                     |                   |                             |                  |                         | 2                  |                                | 2               |
| 38  | St. Antoine Market.....                   |                   |                             |                  | 1                       |                    |                                | 2               |
| 39  | St. Catherine and Western Park.....       |                   |                             |                  |                         |                    | 1                              | 2               |
| 40  | St. Catherine and Delorimier.....         |                   |                             |                  |                         | 1                  |                                | 2               |
| 41  | St. Gabriel Market.....                   |                   |                             |                  |                         | 1                  | 1                              | 2               |

## SCHEDULE No. 13.—Continued.

| No. | LOCATION.  | Cast Iron Basins. | Stone and Cement. | Stone Fountains. | Cash Iron Fountains. | Wood Fountains. | Cast Iron Drinking Troughs. | Number of Jets. |
|-----|--|-------------------|-------------------|------------------|----------------------|-----------------|-----------------------------|-----------------|
| 42  | St. Louis Square .....                                 | 1                 |                   |                  | 2                    |                 |                             | 2               |
| 43  | St. Patrick and Richmond .....                         |                   |                   |                  |                      |                 |                             | 1               |
| 44  | St. Patrick and Napoleon .....                         |                   |                   |                  | 1                    |                 |                             | 1               |
| 45  | St. Patrick and Wellington .....                       |                   |                   |                  | 1                    |                 |                             | 1               |
| 46  | St. Thomas and Ottawa .....                            |                   |                   |                  | 1                    |                 |                             | 1               |
| 47  | Victoria Square South of Craig .....                   |                   | 1                 | 2                |                      |                 |                             | 3               |
| 48  | Victoria Square North of Craig .....                   | 3                 |                   |                  |                      |                 |                             | 3               |
| 49  | Viger Square Basin No. 1 .....                         |                   | 1                 |                  |                      |                 |                             | 1               |
| 50  | Viger Square Basin No. 2 .....                         | 3                 |                   |                  |                      |                 |                             | 3               |
| 51  | Viger Square .....                                     |                   |                   |                  | 1                    |                 |                             | 1               |
| 52  | Wellington and Centre .....                            | 1                 |                   |                  | 1                    |                 |                             | 2               |
| 53  | Wellington and Magdalen .....                          |                   |                   |                  | 1                    |                 |                             | 1               |
| 54  | Western Park .....                                     | 2                 | 1                 |                  |                      |                 |                             | 3               |
| 55  | St. Patrick's Square .....                             | 2                 |                   |                  |                      |                 |                             | 2               |
| 56  | Dalhousie Square .....                                 | 2                 |                   |                  |                      |                 |                             | 2               |
|     | Place D'Armes : De Maisonneuve monument not completed. |                   |                   |                  |                      |                 |                             |                 |

| No. | LOCATION.  | Road Watering Nozzles. | Cast Iron Fountains. | Wood Fountains. | Cast Iron Cattle Drinking Troughs. | Number of Jets. |
|-----|--|------------------------|----------------------|-----------------|------------------------------------|-----------------|
| 1   | High Level Reservoir .....                         |                        |                      |                 |                                    | 1               |
| 2   | Foot of Elevator .....                             |                        |                      |                 |                                    | 1               |
| 3   | Alongside Molson's Fence .....                     |                        |                      |                 |                                    | 1               |
| 4   | Above Golf Club House .....                        |                        |                      |                 |                                    | 1               |
| 5   | Park Road, North of Elevator .....                 | 3                      | 10                   |                 |                                    | 3               |
| 6   | Park Road, running west side Hall's property ..... |                        |                      | 1               |                                    | 1               |
| 7   | Park Avenue opposite Duluth .....                  | 1                      |                      |                 |                                    | 2               |

## SCHEDULE No. 13.—Continued.

| No. | LOCATION.<br><br>Distributed along the Wharves. | Head Watering<br>Nozzles. | Cast Iron<br>Fountains. | Wood Fountains. | Cattle<br>Water Troughs. | Urinals. | Number of Jets. |
|-----|---|---------------------------|-------------------------|-----------------|--------------------------|----------|-----------------|
|     |   |                           |                         |                 |                          |          |                 |
| 1   | Wind-Mill Point.....                            |                           | 5                       |                 |                          |          | 5               |
| 2   | Allan's Wharf.....                              |                           | 1                       |                 |                          |          | 1               |
| 3   | Allan's Shed.....                               |                           |                         |                 |                          |          |                 |
| 4   | Opposite Custom House.....                      |                           |                         |                 |                          |          |                 |
| 5   | King's Basin.....                               |                           | 1                       |                 |                          |          | 1               |
| 6   | Dominion Line.....                              |                           |                         |                 |                          |          |                 |
| 7   | Foot of Jacques Cartier Square.....             |                           | 1                       |                 |                          |          | 1               |
| 8   | Foot of St. Gabriel St.....                     | 1                         |                         |                 |                          |          | 1               |
| 9   | St. Helen's Island Ferry.....                   |                           |                         |                 |                          |          |                 |
| 10  | Beaver Line.....                                |                           |                         | 1               | 1                        |          | 2               |
| 11  | Donaldson Line, foot of Grant St.....           |                           |                         |                 |                          | 1        | 1               |
| 12  | Commissioners, East of Berri.....               | 1                         |                         |                 |                          |          | 1               |
| 13  | Longueuil Ferry.....                            |                           |                         |                 |                          |          |                 |
| 14  | Foot of Marlborough St.....                     |                           |                         |                 |                          |          |                 |
| 15  | Foot of Dezery St.....                          |                           |                         |                 |                          | 1        | 1               |
| 16  | West of Gale St.....                            |                           |                         |                 |                          | 1        | 1               |



## SCHEDULE No. 14.

DETAILED STATEMENT OF EXPENDITURE FOR THE YEAR 1893.—*Continued.*

|  |    |      |    |      |    |      |
|--|----|------|----|------|----|------|
|  | \$ | cts. | \$ | cts. | \$ | cts. |
|--|----|------|----|------|----|------|

|                   |  |  |  |  |       |    |
|-------------------|--|--|--|--|-------|----|
| Brought over..... |  |  |  |  | 51192 | 99 |
|-------------------|--|--|--|--|-------|----|

## RESERVOIRS.

|                                 |     |    |  |  |      |    |
|---------------------------------|-----|----|--|--|------|----|
| Repairs to dwellings .....      | 20  | 35 |  |  |      |    |
| Repairs to banks and walls..... | 104 | 23 |  |  |      |    |
| McTavish shovelling snow.....   | 69  | 00 |  |  |      |    |
| High Level Watching.....        | 614 | 74 |  |  |      |    |
| Fuel .....                      | 56  | 95 |  |  |      |    |
| Arc Light .....                 | 172 | 07 |  |  |      |    |
| Telephone service .....         | 37  | 40 |  |  |      |    |
| Sundries .....                  | 11  | 57 |  |  |      |    |
|                                 |     |    |  |  | 1086 | 31 |

## ENGINE HOUSE H. L.

|                                     |      |    |  |  |      |    |
|-------------------------------------|------|----|--|--|------|----|
| Wages .....                         | 1342 | 22 |  |  |      |    |
| Fuel for engine .....               | 4778 | 18 |  |  |      |    |
| Supplies .....                      | 454  | 87 |  |  |      |    |
| Repairs to machinery & boilers..... | 347  | 19 |  |  |      |    |
| Telephone service .....             | 50   | 00 |  |  |      |    |
| Girders round store room &c.....    | 50   | 94 |  |  |      |    |
| Sundries .....                      | 27   | 60 |  |  |      |    |
|                                     |      |    |  |  | 7051 | 00 |

## DISTRIBUTION PIPES.

|  |       |    |  |  |       |    |
|--|-------|----|--|--|-------|----|
| Repairs to mains, services and valves..... | 17054 | 77 |  |  |       |    |
| Thawing pipes .....                        | 23647 | 63 |  |  |       |    |
| Inspecting pipes .....                     | 2355  | 15 |  |  |       |    |
| Iron castings &c .....                     | 146   | 58 |  |  |       |    |
| Wood, planks, &c.....                      | 1031  | 33 |  |  |       |    |
| Brick, cement, &c.....                     | 17    | 75 |  |  |       |    |
|  |       |    |  |  | 44253 | 21 |

## METER DEPARTMENT.

|                    |      |    |  |  |      |    |
|--------------------|------|----|--|--|------|----|
| Inspecting .....   | 2358 | 15 |  |  |      |    |
| Repairing &c ..... | 1550 | 79 |  |  |      |    |
|                    |      |    |  |  | 3908 | 94 |

|              |  |  |  |  |        |    |
|--------------|--|--|--|--|--------|----|
| Carried..... |  |  |  |  | 107492 | 45 |
|--------------|--|--|--|--|--------|----|



# DETAILED STATEMENT

1933.—Continued

## AQUEDUCT

|                               | \$ | cts. | \$   | cts. |
|-------------------------------|----|------|------|------|
| Repairs to fences, gates and  |    |      | 1074 | 41   |
| Repairs to bridges .....      |    |      |      |      |
| Cleaning ditches, &c .....    |    |      |      |      |
| Dam .....                     |    |      |      |      |
| Sundries .....                |    |      |      |      |
| Ass't guardian's salary ..... |    |      |      |      |
| Police service .....          |    |      | 635  | 61   |
| Cutting weeds .....           |    |      |      |      |

## WHEEL HOUSING

|                                  |  |  |      |    |
|----------------------------------|--|--|------|----|
| Repairs to buildings .....       |  |  |      |    |
| " to machinery .....             |  |  |      |    |
| Fuel .....                       |  |  |      |    |
| " for dwellings .....            |  |  |      |    |
| Grounds round the building ..... |  |  | 1423 | 66 |
| Supplies .....                   |  |  |      |    |
| Telephone service .....          |  |  |      |    |
| Light & sundries .....           |  |  |      |    |

## ENGINE HOUSE

|                                |  |  |      |    |
|--------------------------------|--|--|------|----|
| Repairs to boilers .....       |  |  |      |    |
| " to machinery .....           |  |  |      |    |
| " to engine and L .....        |  |  |      |    |
| Repairs to coal shed .....     |  |  | 1246 | 93 |
| Wages .....                    |  |  |      |    |
| Coal for steam .....           |  |  |      |    |
| Rent for land .....            |  |  |      |    |
| Telephone service .....        |  |  |      |    |
| Supplies .....                 |  |  |      |    |
| Light and sundries .....       |  |  |      |    |
| Putting out fire in coal ..... |  |  |      |    |

## SPECIAL APPROPRIATIONS

Over coats for inspectors

## PIPE TRAIL

Repairing valves &c .....

Carriage .....

140373 58

## SCHEDULE No. 14.

STATEMENT OF EXPENDITURE FOR THE YEAR 1893.—*Continued.*

|                           | \$ | cts.   | \$ | cts. | \$     | cts.      |
|---------------------------|----|--------|----|------|--------|-----------|
| Brought over.....         |    |        |    |      | 140373 | 58        |
| SHOP ON DÉSIRÉ ST.        |    |        |    |      |        |           |
| .....                     |    | 816    |    | 00   |        |           |
| Oil .....                 |    | 23     |    | 06   |        |           |
| Service .....             |    | 50     |    | 00   |        |           |
|                           |    |        |    |      | 889    | 06        |
| MACHINE SHOP.             |    |        |    |      | 27     | 00        |
| STAFFS' SALARIES.         |    |        |    |      |        |           |
| .....                     |    | 1114   |    | 00   |        |           |
| Engine houses .....       |    | 7600   |    | 00   |        |           |
| Oil .....                 |    | 600    |    | 00   |        |           |
| .....                     |    | 900    |    | 00   |        |           |
|                           |    |        |    |      | 20214  | 00        |
| MISCELLANEOUS.            |    |        |    |      |        |           |
| Agencies for office.....  |    |        |    |      | 1188   | 94        |
| Keep Superintendent ..... |    | 400    |    | 00   |        |           |
| " foreman .....           |    | 350    |    | 00   |        |           |
| " Sally .....             |    | 200    |    | 00   |        |           |
|                           |    |        |    |      | 950    | 00        |
| Taxes .....               |    |        |    |      | 354    | 42        |
|                           |    |        |    |      | 23623  | 42        |
| PIPE LAYING.              |    |        |    |      |        |           |
|                           |    |        |    |      |        | 163997 00 |
| .....                     |    | 108383 |    | 63   |        |           |
| Lead, zinc &c.....        |    | 6342   |    | 13   |        |           |
| Pipes .....               |    | 3900   |    | 44   |        |           |
| Brass works .....         |    | 2045   |    | 81   |        |           |
| Iron, cord wood, &c ..... |    | 5830   |    | 98   |        |           |
| Sand, clay, &c .....      |    | 3090   |    | 30   |        |           |
| Castings .....            |    | 25967  |    | 90   |        |           |
| Ware, packing &c.....     |    | 2873   |    | 91   |        |           |
| .....                     |    | 3125   |    | 90   |        |           |
|                           |    |        |    |      | 161561 | 00        |
| Carried over.....         |    |        |    |      | 163997 | 00        |

## SCHEDULE No. 14.

DETAILED STATEMENT OF EXPENDITURE FOR THE YEAR 1893.—*Continued.*

|  | \$    | cts. | \$     | cts.   | \$     | cts. |
|--|-------|------|--------|--------|--------|------|
| Brought over.....                        |       |      | 161561 | 00     | 163997 | 00   |
| <b>PIPE LAYING.—<i>Continued.</i></b>    |       |      |        |        |        |      |
| Cast iron pipes.....                     | 91617 | 31   |        |        |        |      |
| Wrought iron pipes.....                  | 62    | 30   |        |        |        |      |
| Valves and service stones.....           | 118   | 00   |        |        |        |      |
| Sundries.....                            | 3124  | 44   |        |        |        |      |
| Rock excavation in St. J. Bte ward ..... | 73    | 75   |        |        |        |      |
| Carting pipes.....                       | 2465  | 98   |        |        |        |      |
| Coal.....                                | 635   | 86   |        |        |        |      |
| Repairing streets.....                   | 3337  | 71   |        |        |        |      |
|  |       |      |        | 262996 | 35     |      |
| New engine .....                         | 2010  | 70   |        |        |        |      |
| Suction pipe .....                       | 1789  | 87   |        |        |        |      |
|  |       |      |        | 3800   | 57     |      |
|  |       |      |        |        | 266796 | 92   |
| Grand Total.....                         |       |      |        |        | 430793 | 92   |

## SCHEDULE No. 15.—INVENTORY.

INVENTORY OF STOCK ON HAND, JANUARY 1894.

| DESCRIPTION.               | 24"  | 20" | 16" | 12"  | 10" | 8"   | 6"  | 4"  | 2½" | 1½" |
|----------------------------|------|-----|-----|------|-----|------|-----|-----|-----|-----|
| Cast iron pipes (new) feet | 2018 | 865 | 239 | 2623 | 956 | 2934 | 684 | 621 | 396 | 441 |

| DESCRIPTION.                 | 30" | 24" | 20" | 16" | 12" | 10" | 8" | 6" | 4" |
|------------------------------|-----|-----|-----|-----|-----|-----|----|----|----|
| Stop valves .....            |     | 1   | 3   | 2   | 9   | 2   | 2  | 11 | 1  |
| Slip sockets .....           | 2   | 3   | 2   | 4   | 29  | 35  | 38 | 58 | 25 |
| Cast iron caps .....         |     |     | 23  | 16  | 87  | 61  | 79 | 23 | 27 |
| Cast iron plugs .....        | 34  | 16  | 33  | 10  | 23  | 32  | 6  | 62 | 63 |
| Cast iron double bends ..... |     |     |     |     | 24  | 46  | 25 | 10 | 53 |
| Cast iron ½ bends .....      |     |     |     |     | 38  | 52  | 1  | 14 | 11 |
| Cast iron ¼ bends .....      |     |     |     |     | 15  | 12  | 31 | 41 | 42 |
| Cast iron sweeps .....       | 3   | 4   | 11  | 11  |     | 0   |    |    |    |
| Radial sockets 20° .....     | 9   | 3   | 10  | 8   | 15  | 25  | 22 |    |    |
| Radial sockets 10° .....     | 9   | 3   | 8   | 10  |     | 48  | 16 |    |    |

## CROSSES.

| 30 x 30 | 30 x 24 | 30 x 20 | 30 x 12 | 30 x 6 | 30 x 4 | 24 x 24 | 24 x 16 | 24 x 12 | 24 x 8 | 20 x 16 |
|---------|---------|---------|---------|--------|--------|---------|---------|---------|--------|---------|
| 1       | 1       | 2       | 5       | 2      | 1      | 5       | 4       | 6       | 2      | 1       |

| 20 x 12 | 20 x 6 | 16 x 16 | 16 x 12 | 12 x 12 | 12 x 10 | 12 x 8 | 12 x 6 | 10 x 16 | 10 x 8 | 10 x 6 |
|---------|--------|---------|---------|---------|---------|--------|--------|---------|--------|--------|
| 5       | 1      | 3       | 11      | 59      | 7       | 7      | 14     | 10      | 19     | 16     |

| 10 x 4 | 8 x 8 | 8 x 6 | 8 x 4 | 6 x 6 | 4 x 4 |
|--------|-------|-------|-------|-------|-------|
| 8      | 44    | 7     | 6     | 21    | 8     |

## TEES.

| 30 x 24 | 30 x 12 | 30 x 6 | 30 x 4 | 24 x 12 | 24 x 6 | 24 x 4 | 20 x 12 | 20 x 8 | 20 x 4 | 16 x 12 |
|---------|---------|--------|--------|---------|--------|--------|---------|--------|--------|---------|
| 2       | 7       | 1      | 6      | 12      | 9      | 13     | 17      | 2      | 5      | 2       |

| 16 x 10 | 16 x 6 | 16 x 4 | 12 x 12 | 12 x 10 | 10 x 10 | 10 x 8 | 10 x 6 | 10 x 4 |
|---------|--------|--------|---------|---------|---------|--------|--------|--------|
| 22      | 3      | 2      | 1       | 8       | 12      | 22     | 1      | 2      |

SCHEDULE No. 15.—INVENTORY.—*Continued.*

## TEES.

| 8 x 8 | 8 x 6 | 8 x 4 | 6 x 6 | 6 x 4 | 4 x 4 |
|-------|-------|-------|-------|-------|-------|
| 5     | 18    | 4     | 7     | 3     | 16    |

## TAPERS.

| 30 x 24 | 24 x 20 | 24 x 16 | 20 x 16 | 16 x 12 | 12 x 10 | 20 x 12 | 12 x 8 | 12 x 6 | 12 x 4 | 10 x 8 |
|---------|---------|---------|---------|---------|---------|---------|--------|--------|--------|--------|
| 5       | 1       | 3       | 6       | 7       | 12      | 5       | 29     | 32     | 50     | 4      |

| 10 x 6 | 10 x 4 | 8 x 6 | 8 x 4 | 6 x 4 |
|--------|--------|-------|-------|-------|
| 23     | 15     | 19    | 14    | 38    |

## BREECHES PIPES.

| 40 x 40 | 30 x 30 | 30 x 24 | 24 x 24 | 20 x 20 | 16 x 16 | 12 x 12 | 10 x 10 | 8 x 8 | 6 x 6 |
|---------|---------|---------|---------|---------|---------|---------|---------|-------|-------|
| 2       |         | 1       | 3       | 2       | 3       | 2       | 6       | 5     | 4     |

## CASTINGS FROM 3" TO 1½"

| CROSSES. |        |       |        |
|----------|--------|-------|--------|
| 3 x 3    | 3 x 2½ | 3 x 2 | 3 x 1½ |
| 12       | 11     | 12    | 12     |

| ELBOWS (Square). |     |    |     | ELBOWS ¼ SWEEP. |     |    |     |
|------------------|-----|----|-----|-----------------|-----|----|-----|
| 3"               | 2½" | 2" | 1½" | 3"              | 2½" | 2" | 1½" |
| 24               | 26  | 37 | 6   | 24              | 26  | 54 | 1   |

SCHEDULE No. 15.—INVENTORY.—*Continued.*

## CASTINGS FROM 3" TO 1½"

| DOUBLE BENDS. |     |    |     | BONNETS. |     |    |
|---------------|-----|----|-----|----------|-----|----|
| 3"            | 2½" | 2" | 1½" | 3"       | 2½" | 2" |
| 6             | 6   | 6  | 6   | 2        | 16  | 15 |

| PLUGS. |     |    |     | SOCKETS. |     |    |     |
|--------|-----|----|-----|----------|-----|----|-----|
| 3"     | 2½" | 2" | 1½" | 3"       | 2½" | 2" | 1½" |
| 23     | 17  | 17 | 33  | 48       | 54  | 47 | 42  |

|                            |    |                                     |     |
|----------------------------|----|-------------------------------------|-----|
| New hydrants (5 noz )..... | 8  | Street watering nozels (brass)....  | 713 |
| Cast iron fender post..... | 1  | Hydrant nozels (brass) .....        | 9   |
| Assorted valve covers..... | 25 | Assorted spindles.....              | 35  |
| Hydrants already used..... | 10 | Rods for stop cocks (assorted) .... | 10  |
| 3 Nozel hydrants .....     | 3  |                                     |     |

|                                 |     |                                   |       |
|---------------------------------|-----|-----------------------------------|-------|
| 1" pneumatic stop cocks.. ..... | 13  | 2" iron pipe in feet .....        | 140   |
| ¾" " " " .....                  | 17  | 1½" " " .....                     | 105   |
| ¾" " " " .....                  | 128 | 1" " " .....                      | 280   |
| ¾" way " " " .....              | 14  | ¾" " " .....                      | 210   |
| 2" ground cocks .....           | 3   | 201 rolls 1" lead pipe in lbs.... | 48240 |
| 1" " " .....                    | 66  | 117 " ¾" " " .....                | 23257 |
| ¾" " " .....                    | 91  | 138 " ½" " " .....                | 20317 |
| ¾" " " .....                    | 78  | Pig lead in pounds (258) brass.   | 20510 |
| 1" nozles .....                 | 10  | Ingot tin in pounds .....         | 405   |
| ¾" " .....                      | 255 | ¾" copper tubing in pounds .....  | 694   |
| ¾" " .....                      | 61  | 4" iron boxes .....               | 5     |
| 1 x 58 tees .....               | 31  | Footpath plates complete .....    | 430   |
| ¾ y.....                        | 7   | Cast iron caps for tube boxes ... | 125   |
| Assorted covers for boxes ..... | 273 |                                   |       |

JOHN FALLON,  
Foreman at Shop.

## SCHEDULE No. 16.

Dwellings, stores, shops, offices, warehouses, manufactories, hotels, &c.,  
in the City of Montreal, for the year 1893-4 with the assessed  
water rates thereon :

## DWELLINGS.

| Rate. | Assessed. | Tenanted. | Vacant. | Rate. | Assessed. | Tenanted. | Vacant. | Rate.  | Assessed. | Tenanted. | Vacant. |
|-------|-----------|-----------|---------|-------|-----------|-----------|---------|--------|-----------|-----------|---------|
| \$    |           |           |         | \$    |           |           |         | \$     |           |           |         |
| 1 50  | 12        | 8         | 4       |       | 42361     | 40381     | 1980    |        | 45204     | 43107     | 2097    |
| 2 25  | 1666      | 1521      | 145     | 20 25 | 24        | 22        | 2       | 43 50  | 5         | 5         |         |
| 3 00  | 3348      | 3173      | 175     | 21 00 | 131       | 124       | 7       | 45 00  | 155       | 150       | 5       |
| 3 75  | 5265      | 5016      | 249     | 21 75 | 5         | 5         |         | 48 75  | 80        | 79        | 1       |
| 4 50  | 6794      | 6556      | 238     | 22 50 | 704       | 672       | 32      | 52 50  | 94        | 93        | 1       |
| 5 25  | 5661      | 5506      | 155     | 23 25 | 8         | 8         |         | 56 25  | 61        | 61        |         |
| 6 00  | 4151      | 3988      | 163     | 24 00 | 214       | 204       | 10      | 60 00  | 68        | 68        |         |
| 6 75  | 1624      | 1552      | 72      | 24 75 | 9         | 8         | 1       | 63 75  | 8         | 8         |         |
| 7 50  | 3160      | 2998      | 162     | 25 50 | 156       | 153       | 3       | 67 50  | 28        | 28        |         |
| 8 25  | 545       | 529       | 16      | 26 25 | 208       | 198       | 10      | 75 00  | 32        | 31        | 1       |
| 9 00  | 2341      | 2213      | 128     | 27 00 | 208       | 203       | 5       | 82 50  | 7         | 7         |         |
| 9 75  | 773       | 722       | 51      | 27 75 | 2         | 2         |         | 90 00  | 29        | 28        | 1       |
| 10 50 | 1155      | 1088      | 67      | 28 50 | 60        | 58        | 2       | 93 75  | 1         | 1         |         |
| 11 25 | 1239      | 1174      | 65      | 30 00 | 434       | 41        | 19      | 97 50  | 3         | 3         |         |
| 12 00 | 862       | 819       | 4       | 31 50 | 73        | 73        |         | 105 00 | 11        | 11        |         |
| 12 75 | 157       | 151       | 6       | 33 00 | 30        | 29        | 1       | 12 50  | 4         | 4         |         |
| 13 50 | 736       | 696       | 40      | 33 75 | 205       | 195       | 10      | 120 00 | 1         | 1         |         |
| 14 25 | 89        | 84        | 5       | 34 50 | 13        | 13        |         | 127 50 | 1         | 1         |         |
| 15 00 | 847       | 787       | 60      | 35 25 | 1         | 1         |         | 135 00 | 7         | 7         |         |
| 15 75 | 383       | 365       | 18      | 36 00 | 29        | 29        |         | 150 00 | 1         | 1         |         |
| 16 50 | 403       | 357       | 46      | 37 50 | 232       | 218       | 14      | 225 00 | 1         | 1         |         |
| 17 25 | 100       | 91        | 9       | 39 00 | 2         | 2         |         | 262 50 | 1         | 1         |         |
| 18 00 | 428       | 410       | 18      | 40 50 | 2         | 2         |         | 375 00 | 1         | 1         |         |
| 18 75 | 324       | 293       | 31      | 41 25 | 86        | 85        | 1       |        |           |           |         |
| 19 50 | 298       | 284       | 14      | 42 00 | 7         | 7         |         |        |           |           |         |
|       | 42361     | 40381     | 1980    |       | 45204     | 43107     | 2097    |        | 45803     | 43697     | 2106    |

## SCHEDULE No. 16.—Continued.

## STORES, SHOPS, OFFICES, ETC.

| Rate. | Assessed. | Tenanted. | Vacant. | Rate.  | Assessed. | Tenanted. | Vacant. | Rate.   | Assessed. | Tenanted. | Vacant. |
|-------|-----------|-----------|---------|--------|-----------|-----------|---------|---------|-----------|-----------|---------|
| \$    |           |           |         | \$     |           |           |         | \$      |           |           |         |
| 4 00  | 1213      | 1034      | 179     | 32 00  | 37        | 7279      | 887     | 122 00  | 8849      | 7941      | 908     |
| 5 00  | 852       | 749       | 103     | 34 00  | 132       | 125       | 7       | 130 00  | 15        | 15        |         |
| 6 00  | 1685      | 1488      | 197     | 36 00  | 13        | 12        | 1       | 142 00  | 5         | 5         |         |
| 7 00  | 485       | 435       | 50      | 38 00  | 64        | 59        | 1       | 146 00  | 10        | 10        |         |
| 8 00  | 684       | 604       | 80      | 40 00  | 3         | 1         | 1       | 152 00  | 1         | 1         |         |
| 9 00  | 215       | 209       | 6       | 42 00  | 94        | 92        | 2       | 154 00  | 3         | 3         |         |
| 10 00 | 748       | 654       | 94      | 46 00  | 24        | 24        | 2       | 162 00  | 1         | 1         |         |
| 11 00 | 101       | 97        | 4       | 48 00  | 1         | 1         | 2       | 182 00  | 4         | 4         |         |
| 12 00 | 374       | 340       | 34      | 50 00  | 67        | 65        | 2       | 194 00  | 6         | 6         |         |
| 13 00 | 82        | 49        | 3       | 52 00  | 3         | 3         | 2       | 202 00  | 1         | 1         |         |
| 14 00 | 423       | 390       | 33      | 54 00  | 23        | 23        | 2       | 242 00  | 6         | 6         |         |
| 15 00 | 20        | 20        | 1       | 55 00  | 23        | 23        | 2       | 242 00  | 3         | 3         |         |
| 16 00 | 165       | 152       | 13      | 58 00  | 1         | 1         | 2       | 258 00  | 1         | 1         |         |
| 17 00 | 11        | 42        | 2       | 62 00  | 23        | 23        | 2       | 290 00  | 1         | 1         |         |
| 18 00 | 331       | 296       | 35      | 63 00  | 41        | 41        | 2       | 322 00  | 1         | 1         |         |
| 19 00 | 5         | 5         | 9       | 66 00  | 2         | 2         | 2       | 342 00  | 2         | 2         |         |
| 20 00 | 130       | 121       | 9       | 70 00  | 26        | 26        | 2       | 402 00  | 1         | 1         |         |
| 21 00 | 5         | 5         | 17      | 74 00  | 8         | 8         | 2       | 442 00  | 1         | 1         |         |
| 22 00 | 233       | 216       | 17      | 78 00  | 30        | 30        | 2       | 482 00  | 1         | 1         |         |
| 23 00 | 2         | 2         | 3       | 79 00  | 2         | 2         | 2       | 570 00  | 1         | 1         |         |
| 24 00 | 42        | 39        | 3       | 82 00  | 1         | 1         | 1       | 584 00  | 1         | 1         |         |
| 25 00 | 6         | 6         | 17      | 90 00  | 37        | 36        | 1       | 602 00  | 1         | 1         |         |
| 26 00 | 106       | 179       | 17      | 98 00  | 9         | 9         | 1       | 642 00  | 1         | 1         |         |
| 27 00 | 1         | 1         | 1       | 102 00 | 8         | 8         | 1       | 802 00  | 1         | 1         |         |
| 28 00 | 43        | 42        | 1       | 106 00 | 21        | 21        | 1       | 1506 00 | 1         | 1         |         |
| 29 00 | 1         | 1         | 7       | 110 00 | 1         | 1         | 1       |         |           |           |         |
| 30 00 | 105       | 98        | 5       | 114 00 | 9         | 9         |         |         |           |           |         |
| 31 00 | 5         | 5         |         |        |           |           |         |         |           |           |         |
|       | 8166      | 7279      | 887     |        | 8849      | 7941      | 908     |         | 8918      | 8010      | 908     |



SCHELULE No. 16.—Continued.

| Horses. |       | Cows. |       | Horse stalls. |       | Urinals. |       | Water closets. |       |
|---------|-------|-------|-------|---------------|-------|----------|-------|----------------|-------|
| No.     | Rate. | No.   | Rate. | No.           | Rate. | No.      | Rate. | No.            | Rate. |
|         | \$    |       | \$    |               | \$    |          | \$    |                | \$    |
| 6993    | 2 00  | 900   | 1 00  | 425           | 1 00  | 1114     | 1 00  | 105            | 3 00  |
|         |       |       |       | 433           | 2 00  | 30       | 1 50  | 4848           | 4 00  |
|         |       |       |       |               |       | 98       | 3 00  | 8              | 15 00 |
|         |       |       |       |               |       | 7        | 15 00 |                |       |
| 6993    |       | 900   |       | 858           |       | 1249     |       | 4961           |       |

SPECIAL RATES.

| Bakeries. |       | Beer Bottlers. |       | Fountains. |       | Steam Engines. |             |        | Sundries. |        |
|-----------|-------|----------------|-------|------------|-------|----------------|-------------|--------|-----------|--------|
| No.       | Rate. | No.            | Rate. | No.        | Rate. | No.            | Horse power | Total. | No.       | Rate.  |
|           | \$    |                | \$    |            | \$    |                |             |        |           | \$     |
| 1         | 3 00  | 3              | 3 00  | 2          | 3 00  | 2              | 1           | 1      | 4         | 3 00   |
| 27        | 5 00  | 7              | 5 00  | 2          | 4 00  | 14             | 1           | 14     | 19        | 5 00   |
| 2         | 6 00  | 2              | 10 00 | 4          | 5 00  | 4              | 1 1/2       | 6      | 22        | 6 00   |
| 3         | 7 00  | 1              | 12 0  | 1          | 6 00  | 16             | 2           | 32     | 1         | 7 00   |
| 3         | 8 00  | 1              | 15 00 | 2          | 7 00  | 8              | 3           | 24     | 1         | 8 00   |
| 12        | 10 00 | .....          | ..... | 1          | 9 00  | 13             | 4           | 56     | 5         | 10 00  |
| 7         | 12 00 | .....          | ..... | 6          | 10 00 | 6              | 5           | 30     | 1         | 13 00  |
| 9         | 15 00 | .....          | ..... | 4          | 15 00 | 2              | 6           | 12     | 2         | 15 00  |
| 2         | 18 00 | .....          | ..... | 1          | 17 00 | 4              | 7           | 28     | 1         | 20 00  |
| 4         | 20 00 | .....          | ..... | 1          | 31 00 | 5              | 8           | 40     | 1         | 25 00  |
| 1         | 23 00 | .....          | ..... | 1          | 45 00 | 2              | 9           | 18     | 1         | 30 00  |
| 1         | 25 00 | .....          | ..... | .....      | ..... | 2              | 10          | 20     | 2         | 50 00  |
| 1         | 27 00 | .....          | ..... | .....      | ..... | 1              | 11          | 11     | 1         | 750 00 |
|           | 30 00 | .....          | ..... | .....      | ..... | 2              | 12          | 24     | .....     |        |
| .....     | ..... | .....          | ..... | .....      | ..... | 2              | 13          | 26     | .....     |        |
| .....     | ..... | .....          | ..... | .....      | ..... | 1              | 14          | 14     | .....     |        |
| .....     | ..... | .....          | ..... | .....      | ..... | 3              | 15          | 45     | .....     |        |
| .....     | ..... | .....          | ..... | .....      | ..... | 1              | 16          | 16     | .....     |        |
| .....     | ..... | .....          | ..... | .....      | ..... | 3              | 20          | 60     | .....     |        |
| .....     | ..... | .....          | ..... | .....      | ..... | 1              | 25          | 25     | .....     |        |
| .....     | ..... | .....          | ..... | .....      | ..... | 1              | 34          | 34     | .....     |        |
| .....     | ..... | .....          | ..... | .....      | ..... | 1              | 50          | 50     | .....     |        |
| 76        |       | 14             |       | 25         |       | 94             |             | 586    | 61        |        |

SCHEDULE No. 16.—*Continued.*

## HOTELS AND TAVERNS.

| Rate. | Assessed | Tenanted. | Rate. | Assessed. | Tenanted. | Rate.  | Assessed. | Tenanted. |
|-------|----------|-----------|-------|-----------|-----------|--------|-----------|-----------|
| \$    |          |           | \$    |           |           | \$     |           |           |
| 12 00 | 43       | 43        | ..... | 382       | 382       | .....  | 418       | 418       |
| 17 00 | 93       | 93        | 52 00 | 13        | 13        | 97 00  | 1         | 1         |
| 22 00 | 76       | 76        | 57 00 | 6         | 6         | 102 00 | 4         | 4         |
| 27 00 | 44       | 44        | 62 00 | 3         | 3         | 142 00 | 1         | 1         |
| 32 00 | 47       | 47        | 67 00 | 1         | 1         | 152 00 | 2         | 2         |
| 37 00 | 21       | 21        | 72 00 | 7         | 7         | 162 00 | 1         | 1         |
| 42 00 | 47       | 47        | 77 00 | 2         | 2         | 452 00 | 1         | 1         |
| 47 00 | 11       | 11        | 82 00 | 4         | 4         | .....  | .....     | .....     |
|       | 382      | 382       |       | 418       | 418       |        | 428       | 428       |

## RECAPITULATION :

|                                 | Tenanted.    | Vacant.     | Total.       |
|---------------------------------|--------------|-------------|--------------|
| Dwellings.....                  | 43697        | 2106        | 45803        |
| Stores, shops, offices &c ..... | 8010         | 908         | 8918         |
| Hotels, Taverns &c .....        | 428          | .....       | 428          |
|                                 | <u>52135</u> | <u>3014</u> | <u>55149</u> |

|  |      |
|--|------|
| Steam Engines.....                         | 94   |
| Special charges for manufactories &c ..... | 176  |
| Horse stalls.....                          | 858  |
| Water closets.....                         | 4961 |
| Urinals .....                              | 1249 |
| Horses .....                               | 6993 |
| Cows .....                                 | 900  |



















